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The Builder

AN

ILLUSTRATED WEEKLY MAGAZINE,

FOR THE

ARCHITECT, ENGINEER, ARCHÆOLOGIST, CONSTRUCTOR, SANITARY REFORMER, AND ART-LOVER.

CONDUCTED BY

GEORGE GODWIN, F.R.S., F.S.A.

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"Every man's proper mansion-house, and home, being the theater of his hospitality, the seate of selfe-fruition, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kinde of private princedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

"Architecture can want no commendation, where there are noble men, or noble mindes."—Sir Henry Wotton.

"Our English word To Build is the Anglo-Saxon Býlðan, to confirm, to establish, to make firm and sure and fast, to consolidate, to strengthen; and is applicable to all other things as well as to dwelling-places."—Diversions of Purley.

"Art shows us man as he can by no other means be made known. Art gives us 'nobler loves and nobler cares,'—furnishing objects by the contemplation of which we are taught and exalted,—and so are ultimately led to seek beauty in its highest form, which is Goodness."

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Inauguration of Improvements in London.

THE past week has witnessed an unusual number of those events,—if we date them by the formal completion,—which are so rapidly transforming the architectural and picturesque character of the metropolis. The noble basin which has been in course of execution for some four years past in extension of the Victoria Docks has been opened by the Duke of Connaught; the old burial-ground of the Quakers,—believed to be the first place of interment owned by that religious body,—in Baker's-row, Whitechapel, has been converted into a public garden, and as such was opened by the Prince of Wales; and the freeing to the public for ever of the Putney, Wandsworth, and Hammersmith bridges has also been solemnised by the heir to the throne. Thus, three great elements in the growth of a great capital,—namely, provision for maritime commerce, facilities for internal communication, and room for healthy recreation, have each received at once a development, a stimulus, and a royal acknowledgment of their importance.

While the commercial history of London reaches back to the time of the Roman occupation of England, it was not until the present century that any public dock existed in the neighbourhood of the City, with the exception, of course, of the great natural dock of the river. A century ago the sole accommodation for landing and bonding foreign produce was limited to a single spot, called the "Legal Quay," which extended for about 1,400 ft. seawards from London Bridge. In 1773 Mr. J. Sharp suggested the formation of floating docks,—an accommodation for commerce which had been introduced at Liverpool in 1716. In the year 1800 the West India Docks were commenced; in the year following the London Docks were projected; and in the year 1805 the East India Docks were commenced. Mr. Ralph Walker was engineer for all these undertakings, Mr. William Jessop being associated with him in the West India Docks. In 1824-25, notwithstanding the construction of the above docks, the crowded state of the river, and the urgent need of more dock room, engaged the attention of Parliament, and Acts were passed for Collier Docks, South London Docks, and the St. Katherine Docks, of which the last only were carried out. In the five years from 1830 to 1835 the steam tonnage entering the river nearly quadrupled.

The Victoria Docks, to which a basin without parallel for length in the country, or, it is said, in the world, has now been added, were first proposed in 1842 by Mr. Blyth. This gentleman, after pointing out the site, and the advantages connected with it, did not take any further interest in the matter. But his hint was not destined to be forgotten, for it was given to George Parker Bidder, who at that time was undertaking, with the aid of three or four friends, the construction of a line of railway connecting the Eastern Counties Railway at Stratford with the river Thames. Some idea of the uphill work with which Mr. Bidder had to contend may be formed from the fact that this line, before its completion, was generally known by the name of "Bidder's Folly." It proved, however, so advantageous, that the Eastern Counties Railway took it at cost-price. An extension was then projected to North Woolwich. This was reported against by the Board of Trade; but, owing to the able advocacy of Mr. Austin, before a committee of the House of Commons, the Bill was obtained.

The marsh land on the north of the Thames, between Bugsby's Reach and Galleon's Reach, and bounded by Woolwich Reach on the south, let at the time of which we are speaking for from 6*l.* to 7*l.* per acre. It was partly pasture and partly arable, and before the introduction of steamboats for the conveyance of cattle, it was useful for the pasturage of cattle so near the metropolis. The land was not, however, valued at more than 100*l.* per acre; and even after the passing of the Act of Parliament for the Victoria Docks, land was sold by auction at that price. But the landowners determined to oppose the railway, unless the whole of their land were purchased; a policy the short-sighted nature of which it now seems difficult to realise. Thus the Dean and Chapter of Westminster received 8,000*l.* for forty-seven acres of land, which was not worth more than 4,000*l.*, in order to get rid of this threatened opposition. The Victoria Company paid for the 600 acres which they purchased, at the rate of 250*l.* per acre; the difference between this price and the value of 100*l.* per acre, amounting to 90,000*l.*, went into the pockets of the landowners.

Mr. Bidder's calculation was to the effect that, taking the land at 250*l.* per acre, it could be excavated for 1,250*l.* per acre, and puddled for 250*l.* per acre, so that the cost of the water area, in that situation, would be 1,750*l.* per acre. The jetty system, which had been adopted at the London Docks, afforded great facilities for working, loading, and unloading ships. The line of railway placed the docks in direct communication, by means of the Shoreditch and Fenchurch-street Stations, with the City; and by the Great Northern line with the Midland, and the whole of the manufacturing districts.

The cost of the works, on the opening of the docks on April 1, 1858, had amounted to 706,462*l.*, which the purchase of the Steel-yard Estate, that of extra lands, and 29,000*l.* spent in Parliamentary expenses, brought up to 988,164*l.* The water area at this time was about 100 acres. It comprised the entrance dock from the Thames, with two pairs of gates, leading into a tidal basin of 16 acres, separated, by a dumb jetty, from the main dock of 74 acres, but communicating with it by a single pair of gates, and terminating with a cut, or channel, at the eastern extremity. The basin and dock together (exclusive of the eastern cut) were 4,050 ft. in length, and 1,050 ft. in width, at high-water level. In addition to the dumb or terminal jetty, four jetties, each 580 ft. long, projected into the basin, being each 140 ft.

wide, and placed 430 ft. apart, except the most easterly one, which had a space of 550 ft. Thus a quay-room of nearly three miles in length was provided, although the length of the basin was only 1,350 yards. In the new basin a simpler arrangement has been adopted, the length of the dock being a mile and a quarter, and the width 490 ft.

The site selected by Mr. Bidder was found to afford the unusual advantage of furnishing an admirable building material out of the excavation which it was necessary to make. The surface of the marsh was below the level of Trinity high-water mark. Beneath a layer of about 12 in. of subsoil occur 5 ft. or 6 ft. in thickness of blue and yellow clays; then a bed of from 5 ft. to 12 ft. of peat; and then gravel, overlying the London clay. The latter formation was found throughout the length of the first dock, at a nearly uniform depth of 37 ft. below Trinity high-water mark; and on that foundation, at the depth of 37 ft. 6 in., the brickwork of the upper and lower gate platform was laid. The gravel formed the solid silicious portion of the concrete of which the walls were built. In the new dock the quantity of excavation is stated at 4,000,000 cubic yards, and that of the concrete made at 500,000 cubic yards. The new dock,—henceforward to be called the Albert Dock,—is connected with the Victoria Dock, which we have described, by a canal of 1,400 ft. in length, and stretches in nearly a right line across the peninsula of the former marsh to Galleon's Reach.

One or two very instructive failures occurred during the construction of the original works, as to which it is desirable that every architect who has to design important works for the valley of the Thames should possess full information. It would be difficult to imagine a more promising foundation, under ordinary circumstances, than the gravel bed lying on the London clay. Over great part of the area of London this bed is to be found. It supports some of our most important edifices. But it is one thing to build a church or a palace, and quite another thing to design a stable hydraulic work. The gravel, as many of our readers well know, is full of water. In dealing with a depth of nearly 40 ft. of water at high tide, the ordinary conditions of stability are greatly modified. If the foundation of a wall or pier be laid on the gravel, the water can find its way beneath. The lifting power which it exerts at high tide is then such as the weight of the wall would be unable to resist. In the case of the lower-gate platform, according to the calculations of Mr. Bidder, the pressure of the water upwards, if it were allowed to percolate beneath the foundations, would be more than a ton on the superficial foot (say 2,300lb.), while the weight of the brickwork inside, with 10 ft. of water upon it, would only amount to 1,640 lb. per square foot. Hence the importance of taking out all the gravel, so as to bed the concrete and brickwork solidly on the clay; and the advantage, if not the necessity, of covering the horizontal joints with a close sheet-piling.

On Sunday, the 17th June, 1855, at a time when great progress had been made in the works, the north wall of the lock-chamber began to give way, moving forward bodily into the lock, pushing up the thick puddle towards the centre, bending and breaking the tie-bars behind, and dragging the tie-piles forward, and, in some instances, breaking them off. A few hours later the north side failed in the same way, but the brick side-walls and platforms remained unaffected.

This remarkable subsidence, which was dealt with by the construction of solid concrete walls of 18 ft. in thickness, was due to the hydraulic pressure of the water percolating the gravel. From the commencement of the works in 1853 great pumps had been worked night and day. As this continued for two years, the soil was gradually drained of its contained water for a considerable distance, in all directions. It was found that the water in a well situated in East Ham parish, more than two miles and a quarter from the docks in a direct line, was much lowered while the works were in progress, but recovered its level when they were completed. At the time of the accident, the pumping had been discontinued for some weeks, in order to allow water to collect in the dock to the depth of three feet, with a view of thus testing the clay puddle. It was excluded from the lock chamber by a temporary tank. As the ground behind the walls gradually recovered its charge of water, pressure steadily augmented, and as the clay-puddle afforded no good abutment for the footings of the walls, the consequence was readily to be understood; although it was one which few architects or engineers, unenlightened by any such costly experience, could have been expected to foresee.

The effect of the extension of dock accommodation on the growth of London, and on the increasing value of sites in the neighbourhood, is perhaps not very difficult to calculate. It will be in the nature of an additional impulse given to the activity of the builder, but an impulse acting on the actual lines. It is otherwise with regard to the freedom of the bridges. It may be anticipated that this salutary measure will cause a diversion in the lines in which the activity of the builder is now radiating from the great centres of business. This, indeed, is not a thing of to-day or of to-morrow; but it is nevertheless sure. We recommend those who take an interest in the subject to study what is now taking place in the case of Waterloo Bridge. We beg leave to urge upon the Metropolitan Board of Works not to hide under a bushel the great advantages they have secured to London by the most wise plan of the freeing of the bridges. They owe it to themselves to present us with statistics of the present traffic. As far as can be predicted, the result would be most gratifying. On the first opening of these great thoroughfares, indeed, the increase of traffic disappointed our expectations. These showed that we had not made enough allowance for time. To change habits of business, even for a certain gain, is not a thing to be done in an hour. But now that enough time has elapsed to allow the public to become familiar with the advantages of the new routes,—new in as much as they are free routes,—they appear to be fully availing themselves of the service. The activity of the Waterloo-road, just now presents a very striking contrast to that evinced before the freedom of the bridge. Such, we take it, is sure within a few years to be the case with each of the freed bridges. And as the growth of the delta projecting beyond a line of coast gives proof, century after century, of the force and the direction of the current of the river which forms it, so may we anticipate the improvement and the extension of building along those lines of internal metropolitan communication which are now no longer handicapped by a toll.

ORNAMENTAL IRONWORK AT THE SOUTH KENSINGTON MUSEUM.

SINCE the removal of the great casts of Indian architecture from the South Courts of the South Kensington Museum, the collection of ornamental ironwork which has been exhibited at the Bethnal-green Museum during the last few months has been transferred to the parent museum, where, in a fragmentary form, it for many years found a home. Distributed, through want of adequate exhibiting space, in groups or by solitary specimens in out-of-the-way corridors and galleries, few persons could perceive that which is now, since its re-arrangement, very apparent, namely, that we have here a collection of ornamental wrought-iron work of an almost unique character, the like of which we certainly do not remember to have met with in any other European museum. We are accordingly tempted to offer a few general remarks upon the subject of ironwork.

The oblivious history of Vulcan and the Cyclops, the legendary gods of the forge, encircle the birth of the art with poetical imagery. More than a millennium before Christ it is said that the Greeks discovered iron. Homer writes of a furnace urged by twenty pairs of bellows, into which the ore was cast for the shield of Achilles; and Ecclesiasticus, some 700 years later, presents us with a graphic picture of "the smith sitting by the anvil and considering the ironwork. The noise of the hammer and the anvil is ever in his ears, and his eyes look still upon the pattern of the thing that he maketh." Glaucus of Chios, an art-workman of the second century, is stated by Pausanias to have been the inventor of iron soldering. The use of iron on a large scale was known in the fourth century to the Indians at Delhi, as the iron pillar, more than half of which is hidden many feet in the ground, testifies. Interesting as are these incidents hallowing the age of ironwork, they do not advance an investigation into methods of fashioning iron. Examples of workmanship which can be handled and examined more immediately serve such a purpose.

Broadly speaking, iron may be classified under three heads, viz.,—cast iron, malleable iron, and steel. The presence, or comparative absence, of carbon determines the peculiar qualities of the classes of iron. Thus, malleable iron is freer from carbon than is steel; steel than cast iron; and cast iron contains therefore the largest proportion. Malleable iron, which is comparatively soft, ductile, weldable, tenacious, and not fusible at ordinary temperatures, is used for those arts of the forge, the hammer, and the anvil, which group themselves under "wrought iron." Steel is more like malleable iron than cast iron. It possesses all the properties of ductility and tenacity to be found in iron, and, moreover, is highly elastic, capable of being hardened by tempering, and fusible in furnaces. Steel is used for arms of all kinds, blades, guns, armour, and armour-plating, as well as for articles like axles, cranks, and so forth. Through the exertions of men such as Bessemer, Whitworth, Siemens, and Krupp, it is being adopted for use in works of far larger importance than even that of the famous blade "Mimung," or of the Toledo and Ferrara swords. Cast iron, as its name shows, is used for casting or moulding. It is brittle, and easily fusible. The vast variety of uses to which iron, under its three guises, is put, from nails to tubular bridges, and from needles to railways, occupies so great and interesting an area for observation at the present time, that it will be well to point out that the iron works now under discussion are of an ornamental character, occupying but a small space of the extensive historic field of the uses of iron.

The smiths who designed at their anvils like artists in their *ateliers* scarcely exist any longer. In some obscure German town one may, perhaps, meet with such an artificer; but, to all intents, the hand-wrought ornamental, beaten, riveted, and welded iron is a thing of the past, and will remain so until knowledge of this art is revived, and demand for its practice re-created. A principal reason of the virtual demise of wrought-iron work is traceable to the employment of coal in lieu of wood and charcoal in melting out the metal from the ore. Charcoal furnaces yielded a malleable metal, whereas coal-fed blast furnaces yield pig-iron,—a coarse form of cast-iron. One may, without difficulty, realise the immense change which has come over ironworks since the utilisation of coal for fuel, and the introduction of blast furnaces for smelting.

In Lancashire, Staffordshire, Yorkshire, and Gloucestershire, traces of ancient iron furnaces have been found. Famous ironworks existed in Sussex from very early times. A great bed of iron ore ran from Hastings in a north-westerly direction for some five-and-twenty miles. Roman relics have been found in cinder-beds of disused furnaces. Cæsar mentions iron in the "maritime regions" of Britain. In the thirteenth century we find Sussex supplying iron for the tomb of Henry III. at Westminster; and somewhat later,—

> "Master Huggett and his man John,
> They did cast the first cannon."

The splendid woodlands of Sussex supplied the fuel for the furnaces. So marked, however, was the thinning of the forests for the purposes of fuel supply, that both Henry VIII. and Elizabeth set in operation wood-protective laws. 140 furnaces are recorded as being in use in the seventeenth century, each of which consumed every twenty-four hours from two to four loads of charcoal. Nevertheless, the woodlands of Sussex now bear but few traces of the busy iron trade of a century and a half ago. The sheets of water which are picturesque features in the Weald frequently owe their origin to the ironfounders having dammed the streams into reservoirs, which supplied the water to move the wheels of the hammers and other machinery in the furnaces. The iron trade of Sussex declined in the eighteenth century. Occasionally are still to be purchased delicately-wrought shovels or tongs, snuffers, andirons, and rushlight-holders of the sixteenth and seventeenth centuries; but these and a few monumental slabs in village churches, or finely-wrought decorative screens to be most exceptionally seen, as at St. Paul's Cathedral, are the principal mementoes of the south-eastern English iron foundries.

From the peaceful pastures and parklands of Cæsar's maritime regions one may turn for contrast to the grim, Black Country of the midland and northern counties, with its coal-smoke clouds and roar of thousands of deep, broad-throated blast-furnaces, and see there the modern methods of producing millions of tons of

iron per annum. Blast-furnaces, puddling-furnaces, steam-hammers, and rolling-machines, behemoths of foundries and forges, are here in full operation in the production of those sinews of strength which are imparted to modern constructions. Sometimes an important piece of ornamental ironwork, for an international exhibition, emanates almost abnormally from one or another of the great Cyclopian centres. The arts of welding, soldering, riveting, tenoning, mortising, and swaging, the uses of the hammer, the chisel, graver, file, and "organarium," a quaint machine for shaping small pieces of iron, as handed down by the writings of Theophilus, Monk and Priest, of the twelfth century, are now but little remembered. This is not surprising when one finds that in the late thirteenth and early fourteenth centuries the blacksmith's art was apparently dying out in France. The late M. Viollet-le-Duc, in his valuable "Dictionary of Arts," makes his ideal thirteenth-century forger grumble at the patrons of art, "who will not give a price for anything that does not glitter. Each day the art of the forge declines." "What forger," exclaims the ideal Hugo, "is there at this day to forge a *penture* equal to those on the doors of Notre Dame?" Expatiating upon the careful soldering of the thin-beaten petals of some finely-wrought flower,—the work of his father,—and upon the deterioration to quality of work, caused by adopting a "subterfuge" like rivets, Hugo complains of the migration of his fellow-craftsmen to English and German towns, for "in these places ironworks are so esteemed." It may be for some reason of this kind that the collection under notice abounds in a great number of German specimens of ironwork.

The value of this collection may be regarded from two points of view. First, in respect of treatment or manners of manipulating iron for ornamental purposes; and second, as to the kinds of articles and objects produced in iron. Works about the fourteenth and fifteenth centuries of Gothic design are formed with sharply-cut rods of iron, chamfered and bevelled, tenoned and mortised invisibly together. Of such there are here a minutely-executed three-faced shrine, and near it a small turret-clock. Of the same period are the decorative hinges which stretch across the width of a cathedral door, covering the greater portion of it with scrolls and conventional fruits and flowers. This kind of work is, as a rule, bolted or nailed down to its background. Chests and coffers are ornamented with plaques and strips of pierced and punched thin sheet-iron. In later times the thin sheet-iron was twisted and shaped into acanthus and other leafy forms, and then deftly applied to conceal the rivets in framework. The sequence of soldering, welding, and riveting may also be traced. For pediments of windows and headings to gateways, light iron, fantastically twisted and of a flattened rod treatment, was used extensively in Germany and Italy in the sixteenth and seventeenth centuries. We find in the collection an admirable example of this kind of work. Long, continuous spirals sprout from the extremities of attenuated grotesque figures. The main stems of the spirals interweave one another, and at different junctures, growing on the stem, are odd bird-like creatures with long, pointed beaks. In imitating plumage neither the French, Italian, German, nor English blacksmith has shown himself a worthy competitor of the sixteenth century Japanese smith, Myochin Mune Laru, whose osprey stands in an adjacent court,—a wonderful compound of laminated iron feathers fitted together with the utmost cunning, and counterfeiting of Nature herself. Placed in one of the glass cases at the side of the court, and with other shields of less importance, is a beaten and chiselled sixteenth-century shield in which a high order of workmanship is shown. In a central medallion is a well-drawn and modelled Medusa's head, with its snake-locks curling about and forming a good distribution of lines over the background. Around the medallion is a crisply-cut laurel-wreath, beyond which comes a narrow band, containing the inscription, "GIORGIUS · SIGMAN · AURIFEX · AUGUSTE · HOC OPUS · PERFECIT · ANNO · DOMINI · MDLII · MENSE · AUGUST · DIE · XXVII." Then comes a broad, encircling space, ornamented with seven wreaths and floating ribands. Within the wreaths are words such as TRIUMPHALIS, OVALIS, MURALIS, NAVALIS, CIVICA, &c. There is another bordering of laurel-leaves, and then an outer frieze of bold relief, typifying the triumph of Rome. In that portion of the frieze which is above the Medusa's head sits Rome the eternal, and on her right and left spreads a series of gods and goddesses,—Jove and his satellites, Mars and emblems of his victories, Ceres or Cybele, and Pax. The background to these foremost figures is rich with arms, bucklers, trophies of flowers and abundance, galleys, heads of battering rams, dolphins, helmets, and other martial insignia. The shield is some 2 ft. in diameter, and was purchased for 270*l*. It is one of the chief objects of this class belonging to the Museum. Near the north end of the court stretch the well-known wrought-iron screens made in 1695 by a Nottingham smith,—Huntington Shaw,—for the king's palace at Hampton Court. These screens are masterpieces of elaborately-foliated scroll-work. The style of design is *rococo*. Masks and embroidered cloths, or *lambrequins*, garlands, floral devices, cyphers, festoons, are the ornamental details applied to the square rod framework of the three principal panels of the screen, which are separated from each other by architectural pilasters of open ironwork surmounted with crowns. Similar work on grills and window frames, of which there are here many good examples, abounds in the Engadine and South Germany. The towns of Nuremburg and Augsburg were famous for their blacksmiths, and so, indeed, has London been. Examples of her blacksmiths' art of the Queen Anne and succeeding Georgian periods are notable as showing the craftsman's nice appreciation of the character of iron in respect of its ductility, its strength, and its lightness.

Amongst the varieties of objects for which iron has been used, one finds in the collection, besides grills and gates, already mentioned, railings, balustrades, and other kindred architectural accessories, articles like nut-crackers, a press for sealing documents, seals, keys, locks, coffers, tripods of dainty twisting bands and rods, stands for braziers, fireirons, and dogs; door-handles and knockers, gondola-prows, and, of present manufacture, handles for walking-sticks, trinkets, buckles, bracelets, necklets, and brooches of blackened cast-iron. These latter, of Berlin manufacture, serve to show for what delicate purposes the art of casting may be employed.

The days of lanterns enclosed in shrines of sharply-forged iron, like those jutting from the angles of the Strozzi and Ricardi Palaces in Florence, are past; and so, too, are those of the flame-tongued dragon gargoyles, Brobdingnagian keys, and other trade-signs; panels of beaten iron with royal arms, initials, crowns, and dates; specimens of nearly all these works are included in the collection.

From the point of view of concentrating attention upon one branch of metal-working, it would have been better had a few specimens of brass and bronze work been excluded from the collection of which they now are a part. The educational value of a collection of ornamental ironwork is considerable. Its points of instruction may be emphasised by simplicity in selection and arrangement of the specimens. At present the grouping is not according to any particular order of date, country, or method of production. Full explanatory labels to supply information about sorts of workmanship are necessary to help the public in drawing comparisons between methods, and in gleaning facts concerning the development, decline, and metamorphoses in the art of ironwork. Without some such directions who is to perceive the particular uses of square bars, chamfered and bevelled rods, round, spiral, and grooved rods, of pierced and punched thin plate-work, of *repoussé* and chased work?

The art of casting iron is becoming better understood, and although cast-iron ornament has not the quality or *cachet* of hammered work, there is no reason why designers for cast work should not, by mastering the capabilities of sand and other moulds, adopt certain distinctive features so as to raise cast iron from its present position of being merely a bad and coarse rendering of decorative wrought iron.

At the same time, it might be satisfactory to see signs of a more general revival of the arts of hammering and fashioning iron on the anvil. Modern wrought-iron work is generally deprived of its freshness in appearance. Details are often beaten from a single matrix, which engenders a monotony. Formal geometric precision is a quality now frequently preferred to that vivacity of irregularity, which charms a minority of people, who see in it the character and craft of the workman.

RECENT EXCAVATIONS IN ASIA MINOR.

THE library of the Institute of British Architects has recently received, through the liberality of Professor Donaldson, an interesting foreign addition,—the first numbers of a work of great architectural and archæological interest, on the series of explorations and excavations carried out in Asia Minor, at Miletus, and in the towns of the Gulf of Latmos, and which, apart from the interest they possess in themselves, continue the unpublished inquiries of Mr. Pullan (of the Institute of British Architects), commenced, it will be remembered, some eight or nine years since, at Priene. The work now published by M. Olivier Rayet, a former member of the French École d'Athènes, and M. Albert Thomas, long an occupant of the Villa Medici, at Rome, is devoted to a detailed account of the excavations made by them in 1872 and 1873, at the mouth of the historic river Mæander, not far from Ephesus.* The whole expenses of the excavation the Barons G. de Rothschild and E. de Rothschild have generously taken upon themselves, the work being published under the auspices of the French Government. It may be easily understood what artistic relics were brought to light in the course of the excavations. These again, through the liberality of the Barons de Rothschild, now repose in the museum of the Louvre, where they form, among the many treasures of that priceless collection, some of the most interesting and instructive among the remains of antique art. The work which M. Rayet and M. Thomas are now publishing is more than a mere detailed catalogue of these Greek treasures and the history of their discovery; it is a learned and valuable commentary on the interesting period of art to which they belong. The theatre of the city of Miletus, the Agora of Heraclea (of Latmos), has been explored and excavated by MM. Rayet and Thomas; but perhaps the most interesting of their researches have been devoted to the superb temple of the Didymean Apollo, a curious relic of Greek architecture. The parts in which these are described remain to be published.

The first part of their work MM. Rayet & Thomas published nearly three years ago (in 1877). It is only very recently that they have been able to prepare for the press the second and third parts; but the delay in a work executed with such care as this is excusable, the more so when it arises from the lengthy residence on the scene of their explorations of the two industrious authors.

It is at the mouth of the muddy but poetical and winding stream of the Mæander, in the bay which the alluvial deposits of the river have since Classic days filled up with reed-grown marshes, that lies the field of operations of MM. Rayet and Thomas. Winding down from its mountainous source in the south of the antique province of Phrygia, the Mæander (the *Maiandros* of the modern Greeks, as it was of their ancestors, *Buyuk-Mendie* of the Turks) passes, before reaching the Ægean Sea, many a ruined city of which learned notes and figured coins give one a glimpse of the past splendour. Whirling through its soft bed, the river rolls down, as it has done for centuries past, volumes of mud, and these deposits at the mouth have at length filled up the once existing Bay of Latmos. In their first chapter MM. Rayet and Thomas describe at length, and with many archæological details, the true "mæanderings" of the river which has given its name to that familiar figure of speech. The scene as described is picturesque as the muddy river reaches the plain, now so desolate, alone broken by the broad sheets and pools of water and clusters of reeds, the rose-laurels, and the flocks of waterfowl. Even the Roman Campagna, remarks the author, in its wildest portions, does not cause so impressive a feeling of desolation as this plain, occupied in summer by a few nomad Turcomans, with their dark, camel-hair tents, and their half-starved cattle. From the bay, so treacherous with its reefs, the view is more imposing. "To the left the chain of the Mycale, bathed in that milky and transparent light alone known to those who have seen Greece, seems to plunge into the water its steep, light-gray iridescent slopes, on which the shadows of the deep ravines draw their dark lines. To the right the chalky cliffs of the Milesian coast die

* "Milet et le Golfe Latmique: Tralles, Magnesie, Priène, Milet, Didymes, Heraclée, etc.; Fouilles et Explorations archéologiques," etc. Par Olivier Rayet et Albert Thomas. Paris: Baudry. 4to. Part I.

away to the point of the Posidion, lost in the distance. Behind these cliffs Mount Grion shows its dark-green slopes, balancing, as in a picture, the colour of Mount Mycale. In the centre of the scene the towering triangle of Mount Latmos, rearing its crest like the pediment of a temple, stands out on the pale blue of the sky; its northern slopes leaving between them and Mount Mycale a gaping opening, through which the eye can penetrate to the distant tops of the Mesogide, lost in the dim vapours of the horizon. In the foreground, finally, a pointed hill, rising like an island placed at the entrance of a vast gulf, and which a narrow channel would separate to the right from the continent."

Such is the aspect of the coast as it presented itself in the eighth century before the Christian era to the first Greek colonists whose vessels warily approached the coast. In those distant days the sea formed a wide bay from the slopes of Mounts Thorax and Mycale to those of Latmos and Grion, and it was on the waters of this bay—now dry land—that their vessel was borne by the west wind to the point where the emigrant founded, opposite the antique native town of Tralles, Magnesia of the Mæander, Priene, Miletus, Heraklea, of Latmos and Myonte. It is the ruins of these cities that MM. Rayet and Thomas have explored, and the history of which is learnedly told in their work. The bay became in time commercially and politically important, and numerous are the historical incidents with which its name is connected; but from this very period the action of the Mæander can be traced; little by little the land encroached on the sea, the ports lost their importance, and the population shifted its centre further outwards. With the gradual extension of the plain, Miletus, at the extreme point, was menaced with a similar fate to its companions; one by one the cities were depopulated, Heraklea succumbing among the last. From that day, about the fourth century of the Christian era, the slopes of Mount Latmos became a desert, and remained such till the moment when their very solitude caused them to be chosen by the Byzantine monks as a place for retreat and penitence. The filling up of the port of Miletus, remarks M. Rayet, must have taken place about the same time, and closed the long-delayed decay of the city once so excellently situated, so prosperous at the outset of its history, and against which fortune seemed ever to have been adverse.*

The district of Aïdin, which bears this name from a conquering emir of the thirteenth century, and its capital the antique Tralles, form the subject of the second chapter of MM. Rayet and Thomas's work. The well-populated district is beautiful and fertile. No part of Asia Minor, the authors assure us, unites in such a measure material wealth and picturesque beauty. The capital, Aïdin-Guzel-Hissare, the beautiful fortress of the Emir Aïdin, M. Rayet picturesquely describes in all its Oriental beauty of antiquity from the outside, so sadly different from the inside, with its squalor, its filth, and its crowd of busy Spanish Jews; the *Tcharchi*, or bazaar, filled with its trashy German Brummagem, and Swiss or Belgian cottons; alone relieved by the traditional shops of the *samardjis*, or saddlers, and the carpet-sellers.†

This portion of M. Rayet's work contrasts in its simple graphic narrative with the archæological research of the rest of his volumes; the mention of the English "Ottoman Railway Company," which crowds with inland merchandise the goods station of the "beautiful fortress," carrying to a height this contrast.

M. Rayet's archæological tastes are soon exercised in describing the ruins which occupy the plateau that rises above the Frank quarter of the city of Aïdin: these ruins, of which Smith, Sherard, Chandler, Leak, and the other travellers in Asia Minor all speak, are now known to be those of the city of Tralles. Great as is the interest connected with this city, little idea can be gathered from these remains of its past splendour. The destruction of the town is complete; the architectural remains are scarcely recognisable,—a fact which arises in great part from the nature of the building materials used. Stone is rare in Lydia, but clay abounds. The pottery of Tralles was famous. The Lydian brick, 1½ ft. long, and 1 ft. broad, was much esteemed in the past, and at the epoch of the empire the factories of Italy even adopted its dimensions and name, as we see by reference to Vitruvius.

At Sardis and at Tralles even the more important edifices were built of brick,—at Sardis, the palace of Crœsus; at Tralles another palace built for the kings of Pergamus. It is more than probable, suggests M. Rayet, that the greater part of the public and private edifices of both cities were built of the same material, a fact which, in the case of Tralles, is abundantly proved; as for those portions which still exist they are formed interiorly of a very hard concrete composed of stones and mortar, and exteriorly of a casing of bricks, a species of construction usually attributed to the Romans, as largely used by them, though of which the Greeks were undoubtedly the inventors: it is what they termed the *emplekton*. M. Rayet describes how highly valued in Asia Minor are these ancient bricks so superior to those made in the present day; and he amusingly refers to the workmen he employed for his exploration filling sacks upon sacks of the "touvlais" for their own use.

A lengthy description is given of the theatre at Tralles, the form of which is still recognisable. But the interest of this building, remarks M. Rayet, does not lie so much in its now shapeless ruins; it is in an anecdote related by Vitruvius, and which shows us strikingly the artistic revolution which, under the successors of Alexander, introduced into the decoration of the theatres that loud and questionable taste which Roman architecture was later on to urge to excess. In the past days the "back scene," the *logeion*, remained merely an accessory, but Vitruvius's account transports us to the time when this accessory became the principal feature, when the religious signification retired before the superior interest of the scenic representation. It is then that on the "back scene" it became the custom to paint an architectural view, which, as remarks M. Rayet, could not fail in course of time to fall into the hands of artists more desirous to obtain decorative effect than truth, and degenerate into the wildest extravagance (Vitruv. de Arch., VII., v., 5, 6, 7).

The temple of Asclepius, cited by Vitruvius as a Classic model, together with the other monuments of Tralles (in addition to a number of paragraphs devoted to the architect Pythios, and the use of the Ionic order) occupies the rest of M. Rayet's second chapter; the third, fourth, and fifth chapters dealing with the history of the city, its golden days in the third and second centuries before Christ, when most of its monuments were erected, and during which period it probably numbered among its citizens two sculptors, Apollonios and Tauriscos, famous artists in the past, more familiar to the world at large in connexion with the so-called Farnese Bull of the Naples Museum, and to the vicissitudes of which several paragraphs are devoted. The following chapter, which concludes the first number of the work, continues the ulterior history of Tralles, eventually incorporated in the great Roman empire. Tralles from that time ceases to possess a history; what is only curious to study, remarks the author, is the share it takes in the intellectual movement of the Roman world. Those of its citizens gifted with more than ordinary accomplishments leave their home to seek elsewhere fame and riches. Rome especially attracts them, and there it is that will be found the greater number of its most illustrious children in letters, in art, in science.

The list of the Trallian artists of the imperial period is less long than that of the writers; it only presents two names,—the sculptor, Aphrodisius, who worked at the decoration of the palace of the Cæsars at the Palatine, and the architect, Anthemius, the collaborator of Isidorus of Miletus in the erection of Saint Sophia. He alone, observes M. Rayet, would be sufficient to throw a greater glory on his country than all its famous writers united.

Such is a short sketch of the contents of the first number, a very imperfect summary, it can be understood, of the 116 quarto pages of printed matter, the columns of which are supported by a stout base of closely-packed notes bristling with well-selected Greek and Latin quotations, and references to the English, French, and German writers on, and travellers in, that interesting land of historic and artistic wonders, Asia Minor.

Commendation can be given to the plates that accompany this part as careful, instructive, artistic works, which will interest especially the architect in their masterly treatment of detail. Two maps, two photogravures, views of the present state of the ruins, together with a number of plans, sections, and restorations, form the "atlas" to the first number of MM. Rayet and Thomas's work, which does all concerned in its production the utmost credit, not least among them M. Baudry, the prolific publisher.

* The advance of the land on the sea has been calculated to be at the rate of more than five to six hundred yards in each century.

† M. Rayet devotes an interesting passage to the decay of the beautiful carpet-weaver's art in the East. The very colours used are now of Western origin.

HYDROGRAPHIC SURVEY OF ENGLAND.

COMPLETION OF THE ORDNANCE SURVEY.

A GENERAL assent hailed the application to Government, made the other night verbally in the House of Commons, to hasten the completion of the large Ordnance Survey of England. The subject is one of more than professional interest. For the projection of public works,—of drainage, irrigation, harbourage, or land or water inland communication, the importance of the 6-in. survey is of the first order. This is well known to all engineers, surveyors, and practical men. It was, however, rather with reference to the purchase and sale of landed property that the subject attracted attention in the House of Commons. As to that, the argument is as strong as it is with reference to the construction of works. It might have been thought that no opposition could have been raised to a recommendation the carrying out of which would allow of so material a saving in private, corporate, and public expenditure. That saving would probably be underrated if,—on the consideration that where a private survey has to be made for each special object, the large Ordnance Survey, once made, is available for all and for ever,—we calculate that the country gains thirty-three times the actual cost of the survey.

But no proposal, however sound, seems to command universal assent. In one of the morning papers a writer, under the signature "Observer," recommends the very opposite course. He says that some time since it was promised that the Ordnance Survey should be completed in 1879, and that so long as it is in the hands of professional men it will never be finished. This is a view of the status and the character of the Royal Engineer very similar to that to which we lately directed attention as applied to the architect by a writer in the *British Quarterly Review*. It is not necessary for us to take up the defence of an honourable service. But we call attention to the great want of knowledge of what survey means, no less than to that of what architecture means, displayed by writers who seem to think that the best preparation for doing any kind of scientific or artistic work is—to be wholly uneducated in either art or science. Incredible as it may seem, there is a class of men who do, in point of fact, ride that ridiculous hobby.

The great point to which we would wish to call attention, as regards the completion of the Ordnance Survey, is, that the hydrography of the country should be included in the details collected. This has long since been urged by the late Sir Henry James, and by other engineers, both military and civil. The contrast between our want of information as to the water supply and waterways of England, and that which is readily accessible as to those of France and Italy, is most striking. We hardly know where to put our hand on statements of the outflow of a dozen English rivers. While giving all the information as to length of channel, and area of water-shed, which can be gleaned from the Ordnance Survey, the last work of the late lamented Mr. Ansted was almost wholly silent on this question of outflow. And that silence was due to the fact that the information has never been collected. As to the rivers of France and of Italy, their several mean, minimum, and maximum flows are stated with precision among the elements of hydrographic survey.

The uneasiness which has been felt in so many parts of the country as to the water supply and drainage has culminated in the case of the metropolis. Of that we have spoken elsewhere. We only now refer to it as part of the existing state of things, and at once a very characteristic and a very unsatisfactory part. It is now an old story for the readers of the *Builder* to be told that the first requisite for dealing with any physical process is a knowledge of the facts. In all inquiries the great difficulty is the collection of facts. In physical inquiry, 99 per cent. of the whole difficulty is often in that primary collection. If we attempt to legislate as to any point connected with the travel of a drop of

rain from the summit of Snowdon, Skiddaw, or any other mountain or hill to the sea, without accurate knowledge of the facts of the case, whether as to the sub-aërial or subterranean contour and physical character of the country, we are working in the dark, and willingly working in the dark. We are laying up trouble for the future,—trouble both of a financial and of a sanitary kind. A good deal has of late come to light which proves that we have very seriously underrated the magnitude of the water-supply question, and that we are, perhaps, looking in entirely the wrong direction for the supply of the wants of a not very distant future.

FROM THE BANKS OF THE SEINE.

DURING the recent Congress of Architects held at the École des Beaux-Arts, the punctual attendants at the two o'clock meetings passed more than one profitable half-hour in the court-yard of the studious establishment of the Rue Bonaparte. The pupils of the school can scarcely complain of a want of instructive matter for observation, for, apart from the large glazed court crowded with casts from all the more famous works of the sculptors of antiquity, there is here, as we believe we have mentioned once before, a full-sized model of a corner of the Parthenon, and the two columns of the Græcostasis at Rome, besides another court of Mediæval and later casts. The open courtyard contains a number of original treasures of more than passing interest, ranging from architectural details of the Dark Ages, down to the Renaissance, typically represented by the façade of the princely Château de Gaillon. But amidst these relics of the past, the litter of a number of freshly-opened packing-cases and scattered straw, under a large tent, attracted, during the week of the Congress, no small attention. Inquiry proved this to be connected with the "Envois de Rome," the annual arrival of the works from the pupils of the French Academy at the Villa Medici. These "Envois," consisting of casts, statues, pictures, engravings, medals, and architectural drawings, sent home by the various laureates of the "Prix de Rome" in their respective branches, are annually exhibited at the École in June. On Saturday last (the 26th ult.), the exhibition was opened. To say that the show as a whole, from a French point of view, is satisfactory, is the utmost that can be said. Among the paintings are two or three original pictures,—in two instances very doubtful and somewhat wild attempts at originality, the figures being almost colossal; a certain number of obligatory copies of old masters, a fragment from Michelangelo's noble decoration of the Sistine Chapel; a copy of Bellini's glowing Virgin of the Frari, in Venice, together with several careful Academy chalk studies of the nude. Among the sculptors, much the same spirit is observable. Mercié and Carpeaux, as popular sculptors, are recalled. It is among the architectural exhibits that the most praiseworthy work is to be found; here it is impossible to find fault with the care, the patient industry, the erudition, and the reverential artistic appreciation that are shown in many of the drawings. M. Blondel sends home, on his third year's stay at the Villa Medici, a series of ten large studies of the Temple of Concord,—a drawing of its actual state,—sections, elevations, and plans of the various parts; a number of studies of the portions still standing, justifying the restored view of the Temple which forms one of the series. M. Blondel's exhibits, in themselves of the highest interest, are the more so when it is remembered that it was during the French excavations of 1817 that the existence of the Temple of Concord was first made known to the archæological world. In the same order of research stands M. Paulin's restoration of the huge baths of Diocletian,—a careful ground-plan of the site, marking, amidst the confusion of the more modern additions of Michelangelo's Church of Sta. Maria degli Angeli, the Ospizio Margharita, the old Convent of St. Bernardo, the old cloister, the Palazzetto Massimi, the portions remaining of the classic *thermæ*. At the moment when the Palazzo Ducale at Venice, though being gradually released of its scaffolding, is still not entirely free, the superb drawing of the elevation of the Palace (on the side facing the Piazetta), by M. Nenot, will be looked upon with interest by all who are familiar with the gorgeous design of Calendario. Each particularity is marked; most conspicuous to the observant eye, among their numerous whiter companions, are the two red marble columns of the graceful loggia, from between which were read in the days of the Republic the sentence of death. A ground-plan of the palace completes the Venetian studies of M. Nenot, who has still two years more to pass in the South. Happy students! Of all the artists sent to Italy, it is the architects who now profit most by their sojourn among the exuberant and inspiring creations which lie scattered over the Peninsula; the changes in style from those of Classic antiquity to the latest traces of the Renaissance have left each their mark on the architecture of Italy, the masterpieces of which have not, like those of the sister-art of painting, been torn away and forcibly transplanted to our northern climates. At the risk of offending the painters, one cannot help acknowledging that the architects, English and foreign, at all events when they are young, appear more thorough students abroad than their companions the painters and sculptors. M. Nenot sends three other drawings of the so-called Temple of Nerva, or Mars the Avenger (*Mars Ultor*), believed to mark the site of the Forum Transitorium. The studies consist of drawings done to a scale of quarter the size of the original, a capital and base of a column, the architrave and portion of the roofing, all beautiful drawings of originals familiar to the profession for the purity of their style. Two drawings of the Pitti Palace at Florence complete M. Nenot's industrious second year's work. M. Laloux sends, as the result of his first year's residence in Rome, a series of studies of that mysterious so-called "Temple of the Sun," which has puzzled many a worthy archæologist. If M. Laloux does not throw any light on to the history of these gigantic fragments which so picturesquely adorn the quiet Colonna gardens, his drawings possess a peculiar charm; portions of the architrave, the angle of the pediment, and the frieze, together with details a quarter the size of the original, give one a very complete idea of the interest connected with these beautiful and mysterious fragments of Classic architecture.

While we are still under the roof of the École des Beaux Arts, it may not be out of place to mention the talk in the artistic world that the old École, large as it is, is about to be enlarged. It would appear that its accommodation ill-satisfies its requirements. Certainly there is a little crowding in the old convent of the Petits Augustins, which Alexandre Lenoir transformed at the time of the Revolution into a museum of French antiquities; and although the quiet of the apartment, with its historic memories, still occupied by his son, the respected Secretary of the École, is likely to be disturbed, M. Albert Lenoir, will, we feel sure, be one of the first to aid in the extension of the generous art-educational system of which he is one of the administrators. The École, unfortunately, is more than a school; its overcrowded halls, rooms, and cellars contain an immense number of casts of great value.* The school possesses, in addition, a collection of the drawings and restorations of ancient monuments sent from Rome, like those above mentioned. This interesting collection, sufficient in itself to form an architectural museum of great value, is now, for want of space, hidden from the public in unknown garrets and lumber-rooms. As for the copies of the old masters sent home from Italy, from Spain, and elsewhere, a large number already crowd the great hall, and various ill-lighted vestibules and corridors; while hundreds, cut off their stretchers, are rolled up and packed away. With the wants of the school increasing every day (time was when there were barely five hundred pupils—there are now nearly triple that number), it is evident that the old buildings which served admirably their purpose half a century ago, are utterly insufficient for the present day. The Chamber of Deputies will shortly be asked to vote a quarter of a million sterling for the enlargement of the school, a request which doubtless will meet with no serious opposition.

The *Salon* has now closed its doors, after having been visited by a considerably larger number of persons during the six weeks it remained open than the exhibition of last year; many thousands more official catalogues having been sold, in spite of the innumerable other catalogues in French and English, illustrated, bound, interleaved, and whatnot. In addition, there are several publications at present appearing, in which are reproduced by photogravure, at a very small rate, all the pictures of any note. Notwithstanding that it has been universally admitted that never was there such a bad exhibition, never have more certain means been taken of immortalising its weakness.

Coming curiously enough at the time when a correspondent in these columns has re-suggested that some memorial should be set up to mark the site of the Great Exhibition of 1851 in Hyde Park, a recent decision of the Paris Municipal Council points out almost exactly in what such a memorial should consist. In anticipation of the great *fête* of the 14th inst. (which, from all appearances, will be one of the events of the century in the unanimity of the public rejoicings, in which every private individual is already making preparations to join), the Municipality determined some days since on marking, on the pavement of the Place de la Bastille, the site of the famous prison. The work has already commenced, and in a short time will be traced indelibly, by inlaid stonework, the ground-plan of the old fortress. In the courtyard of the Louvre the same method was adopted some years since to mark the site of the old castle, all trace of which in the subsequent alterations had disappeared. Something of this simple and inexpensive nature might be done with the site of the Great Exhibition of 1851.

INDUSTRIAL CO-OPERATION.

THE question of industrial co-operation, or participation by the workman in the profits of the employer, is one of very considerable importance, which appears to have received more attention on the Continent than it has in England, where, certainly, it has been tried, but with somewhat doubtful success. A work was published about a year or so ago at Leipsig, written by Herr Victor Böhmert, who took a great deal of trouble to ascertain what had been done in various places towards a practical trial of the experiment; and the subject is one of so much interest that a brief *resumé* of his facts can scarcely fail to be acceptable to the readers of the *Builder*. Herr Böhmert made inquiries in every European country, and gives particulars of some 120 cases in which the system has been attempted, deriving his examples as follows:—Germany, 54; Switzerland, 25; France, 17; England, 10; Belgium, 3; United States, 3; Austria and Italy, 3; Scandinavia and Russia, 3. It is not pretended that these instances are exhaustive of the subject; but they are, at all events, sufficient to show what has been done in this direction.

France seems to have taken the initiative in these matters, and the first experiment was made there by M. Leclaire, a painter in a large way of business, who started with nothing in 1826, but succeeded so well, that in 1842 he was enabled to carry out his favourite scheme of allowing his workmen to participate in profits. M. Leclaire died in 1872,* a wealthy man, while his *employés* had received over 30 per cent. beyond their salaries, partly in money presents, and partly in deposits in the savings-bank fund. The total sum returned as having been disbursed in this way between 1842 and 1876 is said to have been no less than 1,760,000 francs, and from the fund thus accumulated, forty-five superannuated members enjoy an income of 1,000 francs per annum, while temporary help is also given of 500 francs per annum. By the balance-sheet of 1879, the accounts showed that 13,000 francs had been distributed amongst 1,082 participants, and 65,000 francs were to the good in the *caisse de secours*.

Since Leclaire's time, other efforts have been set on foot with success, such as those of Chaix & Cie., the railway printers; Bord & Cie., the pianoforte-makers; Larocbe Joubert & Cie., paper-manufacturers; and Henze, of the tan-yards at Coulommes. These and others have all adopted the principle of participation in profits. Another form of the experiment is that of the employer establishing a fund in which each workman shall share according to the value of his place, either after a certain time of service or of age,—a kind of life insurance, in fact. This system was set on foot in 1850, by M. de Conroy, superintendent of the General Insurance Company, and it has been adopted by other firms, such as the Bon Marché shops, Hannapfen & Cie., wine merchants, of Bordeaux;

* We remember seeing, many years ago, in one of the lower rooms of the British Museum, the magnificent collection of architectural casts gathered by Sir Thomas Lawrence. Where are these now?

* Some particulars of the career of this benevolent man appeared in our volume for last year, p. 1419, and before.

the Orleans Railway Company; Godchaux, the printers, &c. Again, there are certain well-known houses which give periodical bonuses upon profits, such as Christofle, the goldsmith; Fourdinois, the upholsterer; Pleyel & Wolff, the piano-makers; and there are many others who have followed these examples. In some shape or other, then, the effort to interweave the interests of the *employé* with those of the employer have taken very good root in France.

Switzerland, in proportion to its limited extent and the sparseness of its population, can show more examples of participation than any other country, although, as the conditions of labour vary throughout the nineteen cantons and six demi-cantons of the Swiss Republic, there has been great diversity in the forms in which the experiments took place. The most ancient, still met with in some districts, is to be found in the agricultural population, in which the farm-labourer or vine-worker frequently shares some part of the land with the owner. In commercial and manufacturing pursuits, participation meets with less difficulties than in most places, owing to the prevalent equality of civil rights and social conditions. The master often lives or works under the same roof as the journeyman, and is, therefore, more impelled to interest himself in the well-being of that journeyman. The Canton of Zurich was the first to take up the question in 1868, and its example was speedily followed by those of Geneva, Basle, and St. Gall. One of the largest and most important firms in Switzerland that have adopted the participation system is that of Geilinger Brothers, cotton-spinners, at Winterthur, though here there is no hard-and-fast line in dealing with the question, the participation of each workman being settled by reference to the foremen and the position which the artisan holds in the establishment. The workmen, however, have experienced steady progressive benefits therefrom, having received in 1867 an increase of 5 per cent. to their wages; from 1868 to 1871, but 2 per cent. (owing to depressed times); in 1872 it was 10 per cent.; and in exceptionally favourable years, such as 1873 and 1874, from 12 to 20 per cent. The system was tried in 1869 by the woollen manufacturing houses of Fleckerstein and Schulthess at Wädenswerl and Feldbach (Zurich). In this case the participation was given through a savings-bank, to the deposits in which bonuses were added. Two large linen-manufacturers at Schaffhausen followed suit, the distribution of profits in 1870 reaching 5,000 francs, while in the next year it went up to the very large sum of 34,000 francs. A certain number of houses in Switzerland have a system of participation, carried out in an improvised manner by premiums and presents, dependent partly on length of service and partly on the production; and in this category may be mentioned several spinning and weaving establishments at Lorze (Zug) and at Ziegelbruch (Glarus), Rutschi & Co.'s silk-mills at Zurich, Dupasquier's watch establishment at Cortaillod (Neufchatel), and the currying and skin-dressing firm of Henri Raymond at Morges (Vaud), &c. M. Spöri, of Barentschweil (Zurich), left by his will 50,000 francs to be divided amongst his workmen; and Henri Kunz, of Zurich, bequeathed no less than 18,000 francs, part of which was divided amongst the workpeople, and part went to the sick-fund and savings-bank. Very many employers make a regular practice of helping their artisans, either in building houses for them, or making donations of coals, wood, groceries, clothes, furniture, or anything else that the household happens to want. In some establishments cows are kept, and the milk sold to the people at such low prices as to be almost nominal. There is no doubt but that the old patriarchal system of community of interest is still very prevalent in Switzerland, the effects of which are plainly visible in the rarity of Swiss appearances in the stormy arena of labour quarrels. The feeling has unhappily disappeared in Great Britain, and we very much question whether the adoption of any such system by a large employer would not be viewed at the present day with a considerable amount of suspicion by the intended recipients. A Swiss firm, which has, of all others, gone most deeply into the experiment of participation, is that of Billon & Isaac, of Geneva, musical-box makers, which employs about 90 or 100 workmen. Since 1871 these masters have given up to their industrials 50 per cent. of the net profits in one form or another; and M. Billon has likewise contributed much to the literature of the question, having written a pamphlet in which the whole of their system is minutely described. Both MM. Billon and Isaac are fully convinced of its equity and good policy, and consider that, if carried properly out, it would do more than anything else to eradicate strikes.

In other Continental countries the participation system has been tried so far but slightly. Some of the Austrian railway companies give bonuses to such of their *employés* as appear to be deserving of encouragement; but only one firm, that of Dr. Marchet, a papermaker at Schlöglmühl, in Lower Austria, has made any regular division of profits amongst the men, taking for a basis the duration of employ, the value of the yearly wages, and the amount of production. In Italy the experiment has been tried satisfactorily at the woollen-mills of Signor Rossi, at Schio, although the money is not given in hard cash, but is spent on various objects of domestic requirement. In Belgium the zinc-mining establishment of Vieille-Montagne has adopted the system, together with a few houses at Antwerp and Verviers. In Denmark, the Baron Zytphen-Adeler, an extensive proprietor in the north-west of Seeland, has successfully tried it on a large scale amongst his agricultural labourers; but only one other manufacturing firm, that of Burmeister & Wain, engineers and shipbuilders at Copenhagen, has followed his example. In Sweden, however, and particularly in Gothenburg, participation has taken root at the steam saw-mills of Strömman & Larson, the well-known philanthropists, who are ever foremost in applying any scheme which seems likely to benefit their people, and it is said that it has exercised the happiest result in diminishing drunkenness,—the plague of Scandinavia, and of Sweden in particular.

THE PARIS LIBERAL ARTS CLUB.

EVER ready to seize any opportunity that may present itself for the development of taste and skill, the Parisians have not failed to support the initiators of what promises to become one of the most pleasant and useful institutions of the gay capital. It has often been demonstrated that in the struggle of life new men do not enjoy a fair chance of obtaining a hearing. This is more especially the case with respect to dramatic authors. The cost of putting a play on the stage is so great that managers dare not make the venture unless the author is well known; particularly as it is, after all, most difficult to judge a play before it is acted. Painters, engravers, sculptors, are all hampered by the difficulty of bringing their works before the public even when they possess undoubted talent. These considerations have led to the creation of the Cercle des Arts Libéraux, which, in the short space of six months, has already proved an unparalleled success. The initiator of this scheme, M. Devriès, had soon grouped a hundred men distinguished in the world of arts and letters as founders of the club. Then the premises, formerly known as Frascati's, in the Rue Vivienne, were secured and transformed into a most luxurious club-house, at a cost of 24,000*l*. On the 21st of December last, after this large sum had been expended, the doors were thrown open, and a magnificent inaugural entertainment given. As a curious detail, and to afford some idea of the lavish character of the hospitality, we may mention that no fewer than 1,900 bottles of champagne were opened on this occasion, and we are further assured that the wine was of a good quality. To use the stock French phrase, "All Paris had been invited, and all Paris was there." The result of this munificence is that 1,700 members have already been enrolled in the club, and it now fully pays its own expenses,—a fact which, apart from the private interest of the persons concerned, may be considered a public benefit, for the institution may undoubtedly facilitate the development of the liberal arts.

Whatever the club undertakes is certain to receive the fullest notice at the hands of the French press, and will be reflected more or less in the journals of Europe. At the present moment it has opened its saloons to an exhibition of painting, and, to encourage the artists who exhibit, has organised a lottery consisting of 15,000 tickets of one franc each, to be sold exclusively to members. The cost of this lottery, the cost of the exhibition, the cloth to cover the walls on which the pictures are hung, the printing of catalogues, tickets, &c., all is defrayed by the club. The whole of the money obtained by the lottery goes to the artists who exhibit. There will be one prize of 5,000 francs, five prizes of 1,000 francs, and ten prizes of 500 francs. None of this money is, however, to be taken out of the club; but the winners are to select pictures from the exhibition to the value of the sums they have won. Thus the artists are certain that some of the pictures will be sold, and this, too, without any favouritism, as it is the winners and not the committee who select the prize-pictures. Apart from the certain minimum sale of 600*l*. worth of pictures, the exhibitors get as much publicity as if their works were hung in the *Salon*. Indeed, the Paris *Salon* seems on the eve of losing its old character. Various disputes have brought about the resignation of half the members of the jury, and the constitution of a new jury for next year promises to be a matter of no small difficulty. The enormous number of pictures admitted, the carelessness of the selection, all tend to create the impression that the great French annual exhibition is degenerating to a picture bazaar; on the other hand, the private exhibitions, such as that organised by this club, are gaining more and more ascendancy, and many of the best painters prefer them to the crowd and confusion of the *salon*. Thus, at the exhibition now held by the Liberal Arts Club, we noticed some admirable paintings by the following well-known artists:—Louise Abbems, Berne-Bellecour, Clairin, Detaille (portrait of a piper of the 42nd Highlanders), some flowers by Mdme. Escalier, and portraits by Fantin-Latour, Henner, Lehmann, and Bastien Lepage. Among the younger artists, whose renown the club will help to create, we remarked a good picture by the son of the great Meissonier, and some admirable engraving by Paul Maurou, whose works are familiar to the readers of the French illustrated papers.

When the present exhibition is over, the club will organise a display of all that relates to the decorative arts, such as wood-carving, chasing, carving on glass, painting on porcelain, &c., and every effort will be made to produce as many unknown men as possible. Also, during the few months of the club's existence, there have been three theatrical and musical evenings. As these were the first efforts, the representations were good, but the plays were not new. Ultimately the managers of the Paris and provincial theatres will be able to see on the stage of the club plays which they have not the courage to present to the public. As the press will also be present, the authors and the new actors will obtain the long-sought-for publicity, and, when approved at the club, may soon hope to appear before the general public.

Such, in a few words, are the general action and scope of this institution, due, we must repeat, solely to private initiative, and principally to the energy and the bold outlay of money on the part of the promoter, M. Devriès. M. de Bonnier, the author of "Attila," is the president; M. J. Collin, member of the Municipal Council and of the Academy, is vice-president; and among the committee are M. Berne-Bellecour, the well-known painter, and M. Jules Claretie, the author. Among a list of celebrated authors, artists, painters, composers, theatre directors, &c., who founded the club, the name of M. Charpentier, architect to the town of Paris, holds an important place, for he designed the façade of the club. This consists of several splendid oak doors, surmounted by ceramic ornamentation, and combined with stone carving, in the best Renaissance style. A fine mosaic covers the floor of the entrance-hall, and facing the door there is a stained-glass window giving an allegorical representation of the liberal arts. The first rooms are the reading-rooms and billiard-rooms, which, when thrown into one, form a long saloon, where the exhibitions are held. Beyond, a room of equal size, is what will be the gaming and card room on ordinary occasions, but which is capable of being rapidly converted into the theatre; for at the end there is the stage, with all the mechanism for scenery complete, so that any play can be put on the stage. In the third range of rooms, we have a bright sunny room, with stained-glass roof, and various other apartments; for the club also possesses a fencing-room, a bath-room, committee-rooms, a green-room, and dressing-rooms for the actors. The club promises to be a fountain from which much good and useful work will flow.

Building in the Temple.—No. 2, Tanfield-court, Temple, will shortly be pulled down to make room for a new wing to the Inner Temple Library.

ELEPHANTS AND TIGERS.

An elephant is a piece of architecture in himself. See how solid and steadfast his mighty frame appears,—huge, immovable, and stately! His legs, resembling columns, rest erect on their firm bases, round and high, supporting a great entablature and superstructure; and his vast head, in front, bears a likeness to a lofty tympanum! But he flaps his pendent ears to disturb the flies, and he is no longer a rude, domed temple erected in his native forest, but a living creature. A building compact of stone and marble is a fine thing. A ship of wood or iron is a great marvel, for it is a structure that moves proudly to its destination on an unstable element. But a great edifice which breathes and lives is still more a miracle.

The tiger, on the other hand, is anything but a solemn animal. Although his stalk may be majestic, his movement is more like a ripple surging along his back as the waving of a billow approaching the shore and about to burst in fury, or, in a milder mood, the undulation of the tops of long grass under the action of the wind, than the gait of a creature so absolutely destructive, unrelenting, and bloodthirsty. His pace, although graceful, is stealthy, and his strong fore-paws fall noiselessly on the ground, as if not to betray his progress. In his colour also, gorgeous in his variegated coat, he offers a marked contrast to the elephant in his suit of sober grey covering his huge form, as he stands quiet and serene in the confidence of his vast strength; while, on the other hand, the great feline, ever restless and suspicious, advances with cautious steps, as if he sought concealment, although resplendent with the most brilliant stripes,—black, yellow, orange, and white. Different as they are in aspect, none the less so are they in habits and temper; still, however, when they meet on their common ground, of jungle or forest, seldom is it to contend, except under the influence of man.

Of both these creatures the art of their native India has naturally made large use; and the very interesting collection, greatly enhanced and expanded of late, of examples in the different branches of structural work,—carving, painting, jewelry, and goldsmith's work, textile fabrics and ornament, and further illustrated by models and photographs,—which opened recently to the public in the Exhibition-road, as an adjunct to the South Kensington Museum, among its other rich stores of the decorative art of the East yields some most interesting illustrations of the modes of the adoption and adaptation of these animals by the native designer.

Tigers appear occasionally in these compositions, but elephants are far the most frequent, especially in architecture, as their great bodies yield solid forms for masses of support, while their trunks, convoluted in a variety of curves, are as accommodating in affording graceful sweeps and flowing lines, as that most used shape of all in ornament, the serpent. The tusks also come in as serviceable points in these compositions, and the large ears also take their part in making up and completing the required contours. The two animals, however, sometimes appear together. In the first room, on entering the apartments of the collection from the Exhibition-road, may, for instance, be observed some bosses, in which these are combined, and very remarkable examples they are of Indian design in architectural carving.

These bosses, which are repeated, are exceedingly well composed, for their purpose of projection and light and shade, out of an elephant's head, fronting the spectator, with his trunk wound round a tiger. Although the parts of each are small from its scale, each boss is so cleverly put together and compacted that it is pretty secure from damage, at the same time that it presents a bold and spirited architectural detail, representing the great creature in the act of crushing his antagonist. Other subjects are displayed in profile and in lower relief, on either side, forming a running accompaniment and connexion between these bosses, which stand out here and there with appropriate emphasis. On the same walls, and close by this example, are other relievi, representing the hunting and securing of elephants by means of their domesticated brethren. These are all Hindu work,—the former being from the Amber-nath temple in Bombay, and the latter from the temple at Orissa in Bengal,—and are of the ninth or tenth century.

The most striking presentation, however, of the ornamental and structural use of the elephant, which arrests attention on entering this first room, is the full-sized plaster-cast from one of the four elephant gateways of the Buddhist tope at Sanchi. A small model of the whole structure of the tope, to which these form the entrances, with its circumvallation gates at four intervals, may be consulted in the same room; it displays the adjustment of these in relation to the principal building; and it may be recognised by this, that the artistic interest of the whole design rests chiefly with these gateways, of which carved representations of elephants form the important feature. They are situated high up on these entrances, and are arranged ingeniously, so as to yield support to the superstructure, turning the angles without abruptness, and twining their trunks so as to combine and complete the composition. It has nothing in common with classic art, and yet is highly satisfactory.

One of the points of view, indeed, in which Indian structural details are so interesting, is their difference from those of our European schools. They seem to have crystallised and shot up from fresh points of origin, and are composed of elements we do not possess. Not only are these the natural forms of the country, but also those suggested by the exuberant imagination of the people; and especially in their temples do these details partake of the character of the extraordinary, and, to our conception, preposterous Hindu mythology. Heterogeneous in combination, and irrational in motive, human heads and arms are multiplied until they appear but excrescences, and the bodies of the figures they are joined to are gifted with the most outrageous proportions and adjuncts; and the features of the forms of other creatures and of the vegetable kingdom are made use of with the same utter disregard of logical propriety or of matter of fact. Yet it cannot but be acknowledged, and, indeed, it forces itself upon the senses, that all this rank growth and unrestrained luxuriance co-exists with a certain delightful harmony of general effect, which is, not unfrequently, missed in works approached more according to rule and canon in the teaching of our Western schools.

Reticulated with many piercings, their structures look like coral edifices, unexpected in their forms, and accidental in their effects, yet leaving nothing to be desired, and as if the artist had worked by infallible instinct rather than by fallible reason. And the best authorities, as Fergusson, the more they study the riches of these results, the more they become enamoured of them, because they seem as if they sprang and grew from the teeming abundance of nature rather than from the logic and pruned exertions of man. If, indeed, the Indian builders were like the coral zoophytes, and made beautiful things because they could not help it, although it somewhat shifts the direction of our admiration, it does not lessen it. However produced these treasures were, we may address our attention to them, and learn, as we are told to do, from the proceedings of the ant. Assuredly the workers of them were no "sluggards," nor did they spare pains; and, when we examine the wealth of the collection in this new department of the South Kensington Museum, in casts, paintings, drawings, carvings, and photographs of these great performances of Indian architecture and decoration, we may well rejoice in their acquisition for the public instruction and delight; and recognise, in contemplating them, that the title of "Empress" seems but correspondent to the rule over a dominion which can array such an Arabian Nights' entertainment of gorgeous abundance.

Admirably as this collection has been arranged by Mr. Richard Thompson, it is only by careful examination that the real qualities of the details of the examples can be done justice to, or the pleasure extracted from them that they can afford, and each visitor may most likely search out best, for him or herself, the subjects of most interest. To the great beauty and elegance of some of the columns, however, although unlike, except in that they are columns, to anything to be found in our Western Classic styles, we would call attention, especially to that one of Hindu art of the eleventh century, from Kutb, near Delhi, which is on the north side of the first room, and to the other of the same date on the other side, which is of almost equal excellence.

In seeking illustration of our theme in the gallery upstairs, although we may find many artistic data, we cannot admit among these Tippoo Saib's toy-tiger, who cannot even growl, as he was wont to do,—as the machinery for that is out of order,—and we may readily turn from it to the small images from the Hindu Pantheon, which are arranged here and there through the rooms. Among these we recognise, as one of the most remarkable, the effigy of Ganesa, who is endowed with an elephant's head. On the strength of this, Sir William Jones calls Ganesa the God of Wisdom, and in the South of India he is in especial estimation with the learned, as, without worship of this divinity, it is held that no literary fame is attainable. It is a curious comment on this, therefore, that by the usual Hindu, the elephant itself is by no means considered as intellectual; "as stupid as an elephant" being by no means uncommon as a bitter taunt.

This does not, however, appear to have been the estimate of the Hindu architects of the earlier days, or configurations of this creature would not have been so frequently associated with their buildings. Nor, assuredly, is it the verdict of our own country, as in one of the finest groups of modern art, the composition of Asia, at the Albert Memorial, by the gifted and lamented J. E. Foley, an elephant is posed in submissive dignity as its central form. We, indeed, look upon this creature as of the highest rank of animal intelligence, and, in our esteem, he disputes the place of pre-eminence, in this respect, with our dear and faithful friend and companion, the dog.

Although the tiger is appropriately the attendant of Bowanee, the goddess of the Thugs, with whom murder is a religion, he does not take part in the mythology of the Hindu Pantheon to the extent that the elephant does, as exemplified in the figure of Ganesa; nevertheless he is in degree considered a sacred animal, simply because he is so dangerous and destructive, and religious ideas of this strange perverted nature interpose to protect him! Sport comes in with its aid in the same direction, and some chiefs even "preserve" tigers, thinking little of an occasional woman or child being carried away by the royal game! Some of the fakirs, or mendicant priests, have succeeded in taming this, their occasional attendant *daimon*, to that degree that a tiger will accompany them obediently and harmlessly through the villages at times of festival. To this point of docility they are said to bring him by debarring him of all raw animal food, and by a diet of rice and ghee, or vegetable butter.

With the docility of the elephant we are all acquainted, and it has become almost a by-word. Although he can scarcely be called an architect, he may have some claims to being a builder. There is an anecdote of him in the latter capacity which may be appropriate to these columns, although we need not be responsible for its authenticity, as, for this, it rests on the high authority of the Rev. J. Wood, the well-known classic in the province of natural history. These are his words in speaking of a particular elephant:—"By profession he was a builder, and was employed in laying stones, under the supervision of an overseer, who came and inspected his work, and, after ascertaining that the task was properly performed, gave the signal to lay another course. On one occasion the elephant placed his foot against the wall and refused to move from the spot when the overseer came to the part of the wall which his body concealed. The overseer, however, insisted on the animal's moving aside, and the elephant, seeing that his stratagem had failed, immediately set to work at pulling down the wall which he had just built, and which was defective in the spot which he had been attempting to conceal from the inspector's eye!"

The elephant of Asia only is in subjection at present, although formerly, at least along the northern shores of Africa, he was in ancient times equally in servitude. Hannibal even brought his elephants across the Mediterranean, and over the Alps, in his invasion of Italy: and, after the conquests in Africa by several of the Roman generals, these animals appeared in their triumphs; and consequently figured on the memorial structures which were erected in record of them. It appears an evident mark of retrocession from the former energy and civilisation of Africa that the subjugation and domestication of this species of elephant since those times has been neglected, and the art of taming them lost, insomuch that the African examples which were brought

over, several years ago, to this country, and placed in our Zoological Gardens, in their infant state, are the first, apparently, for many centuries which have been trained, and instructed, and brought under the dominion of man. It is in our recollection that considerable doubt was expressed, while they were growing up, by the keepers, whether they would eventually prove of a docile nature, and submit to subjection. Since that, however, it has been amply exhibited that they are equally capable of becoming domesticated as their brethren of India; and at holiday times they now take their part, with similar obedience, in adding to the interest of this finest institution in the world of this nature, by stalking about the gardens with easy indifference as to how many visitors are put on their backs. They are of a somewhat different type from those of India, and appear to bear a nearer resemblance than the Asiatic examples to the old genera of trunked and tusked creatures that were so numerous in former ages of the earth, but which have now passed away from the surface of it, and are only at present to be found in fossil remains, or preserved in the ice of the Arctic regions. Their heads are smaller than that of the elephant of Asia, and their ears are larger, and they are somewhat different in build; although loftier in stature, they do not possess the same sage appearance as the Indian species, which has not only been far more used in art, but will hold his own as being, at least in appearance, the more intellectual variety. He is still highly considered in India, not only for his usefulness in carriage, both of men and goods, the lifting of heavy weights, and, as we have seen, for even his building powers, but also for hunting purposes, and generally in State progresses through the country, and as a dignified appendage to rank and royalty. The "points," accordingly, of an elephant are as much a matter of interest in India as those of the horse in Europe; and the following are those which are especially mentioned in a native statement of them:—"Softness of the skin, red colour of the mouth and tongue, an expanded forehead, large ears, the trunk broad at the root, the eyes kindly, the back level, the chest square, the forelegs columnar, the hind-quarters full, with five nails on each foot, each smooth, elastic, and round," and "with these perfections," the account concludes, "the elephant will impart glory and magnificence to a king."

In relation with art, it is evident that he not only, in his frame, suggests fine forms for its details, but that he is in himself a fine subject for decoration. His great shape and power, which enable him to bear aloft in the most stately fashion, the "howdah" on his back, with all the paraphernalia of majesty, his sombre colour offers a fine neutral tint of surface for the contrasted display of the trappings of Oriental magnificence; and he affords an ample field and scope for the most lavish decoration, of which the imagination of the Eastern artist has taken full advantage. In the elaborate ivory carvings also, of which there are several beautiful examples in the upper rooms of the collection of which we have been speaking, he is exhibited frequently in all the dignity of being the chief feature in the processions of foot and horse armaments on festival occasions. And even in the exquisitely-carved sets of chessmen, arranged in ranks on their chequered arena, which we occasionally see, these creatures bear the castles which might be the refuge, and are the defence, of the potentates of mimic warfare. In every aspect, indeed, in nature and in art, which the elephant assumes, he appears a grand animal of dignified presence. And although the Tiger may be more illustrative of the Indian character in rebellion, as displayed at the time of the Mutiny, yet it may, we hope, be trusted confidently that the Elephant will ever remain a characteristic and consistent type of the power of our Indian Empire, and the sagacity of its rulers.

Sheppard's Improved Slide-Rule for Cubing Quantities.—Mr. Stanley, of Great Turnstile, is the sole maker of this rule, which comprises a decimal rule and a duodecimal rule. It appears to have several advantages over the ordinary form, and is a very expeditious rule for multiplying quantities. Moreover, it is simple to use. It gives contents of three dimensions in about half a minute to those who master it, and will thus work out quantities quickly and correctly.

THE THREE BRIDGES.

Wandsworth, Putney (or Fulham), and Hammersmith Bridges were on Saturday last thrown open to the public, free of toll, by the Prince of Wales. At the meeting of the Metropolitan Board of Works on the previous day a report was presented from the Works and General Purposes Committee stating the amounts agreed upon for the purchase of the three bridges: Wandsworth Bridge.—Purchase-money of the undertaking, as per arbitrator's award, 52,761*l.*; purchase-money for two strips of land at side of road leading from the bridge to King's-road, Fulham, as per arbitrator's award, 550*l.*, making a total of 53,311*l.* Hammersmith Bridge.—Purchase-money for the undertaking, as per agreement, 112,000*l.* Fulham Bridge.—Purchase-money for the undertaking, as per arbitrator's award, 58,000*l.*; cost of arbitration, 10*l.* 10*s.*, making a total of 68,010*l.* 10*s.* The total cost of the three bridges was thus 223,321*l.* 10*s.*

"A Short Account of the Three Bridges over the River Thames, and within the Fulham District, to be declared Free of Toll on the 26th day of June," by Thos. Edward Jones, clerk to the Fulham Board of Works, has been privately circulated. Mr. Jones has brought together in a small compass a considerable amount of information concerning the three bridges in question, Fulham, Hammersmith, and Wandsworth, especially as to the first named. It is curious to read the expressions in Parliament, April 4, 1671, when the Bill for building a bridge at Putney was introduced. One of the members for the City of London said he knew, and could assert positively, that the erection of a bridge over the Thames at Putney would not only injure the important city he represented, not only jeopardise it, not only destroy it, but actually annihilate it altogether! The Bill was lost by 13,—54 voting for it and 67 against it. The question then rested for fifty years. The ignorance which has ruled the world, and which does rule the world, is astounding. The present bridge, built from a design by Sir Jacob Ackworth, was opened on the 14th of November, 1729, O.S. The tolls during the one year ended March 25th, 1879, realised 4,462*l.* The price paid by the Metropolitan Board of Works to the shareholders was, as stated above, 58,000*l.*

The tolls taken on Hammersmith Bridge in the year ending May 28th, 1880, amounted to 6,647*l.*; the sum paid by the Metropolitan Board for this bridge is 112,000*l.*

The tolls on Wandsworth Bridge in the year 1878 amounted to 1,109*l.* The sum paid by the Board for the purchase of the undertaking is 52,761*l.*, with about 500*l.* additional for land.

All the bridges crossing the Thames within the London district are now toll-free.

SOME POINTS IN CONNEXION WITH ILLUMINATIVE GAS.

Illuminative gas has, by this time, been in use long enough, one might think, for the general public to know all about it. Some evidence which we propose to give will show how far this is from the truth. Instead of intimate acquaintance with a long domesticated guest, the general public know very little more about the properties of illuminative carbohydrogen than the two facts of its being illuminative when burned, and a dispenser of heat. Certain ratiocinative samples of the general public may have felt constrained to put themselves the question,—how it comes to pass that a gas-jet burning with smokeless flame, when a sufficiency of atmospheric air is allowed to come into operation, immediately begins to smoke so soon as free access of atmospheric air is denied. Certain, but very few, more investigating minds to be found amongst the general public, advancing a stage further in the quest, may have wanted to know how it can happen that illuminative gas, which, as everybody knows, is invisible, can yield visible, tangible, ponderable soot. Beyond this, ordinary popular speculation does not go,—no, truth to tell, nor technical speculation either, as will be made manifest before concluding the note we have in hand. Starting on the groundwork of first principles,—the only starting-point which can open the path to sound conclusions,—we have first to settle in the mind the composition of illuminative gas; and then,—invoking chemistry,—to ascertain what the product, or products, will be when illuminative gas is burned. Ordinary illuminative gas may be curtly described as a gaseous result of chemical union between carbon and hydrogen. The description, however,—true so far as it goes,—must go much farther to comprehend truths belonging to the subject, and without grasping which no useful conclusion can be arrived at. First, there are several gaseous combinations of carbon with hydrogen, all of which may be present in illuminative gas ordinarily supplied, and more than one always is present. Just, however, as science recognises a normal atmosphere as being a mixture of four measures of nitrogen and one of oxygen, an atmosphere never met with out of the laboratory, an atmosphere wholly devoid of watery vapour and carbonic acid, both always present in naturally-existing atmospheric air, together with scores, even hundreds, of other vaporous things present under special circumstances; so science recognises a normal hydrocarbonaceous illuminative gas. This is no other than olefiant gas, to which compound, the nearer approach illuminative gas of corporate supply makes, by so much the more excellent is it. No such thing as pure olefiant gas, however, is or can be supplied by our companies; more, save under penal obligation, the gas companies have overmuch regard for good dividends to supply pure olefiant gas if they could. The illuminative power of any carbonaceous gas is directly proportionate to the amount of carbon in a given bulk. Olefiant gas holds the maximum of carbon in the minimum of space; but by the simple expedient of passing it through a red hot pipe, it is decomposed into other hydrocarbon gases, variously mixed, according to the temperature of the pipe, but all having the common property of holding the original quantity of carbon united with a lessened ponderable amount of hydrogen. Slight reflection will lead to the conclusion that this involves increase of bulk. The operative chiefs of gas-making establishments are only too well aware of this fact, and frequently they turn their knowledge to practical account. Coal distillation effected in a retort very highly heated gives rise to the same decomposition on olefiant gas as transmission through a red-hot tube. One operative chief of a certain gas factory in a certain seaport town told us confidentially that he made a point of supplying expanded (and to the extent of expansion low illuminative) gas for night street-lamp service. He thought to justify the practice by stating that the attenuated gas supplied was good enough for drunken sailors, and that hardly anybody else was about after shop-closing.

Premising that illuminative gas supplied from factories ought to contain nothing else than carbon and hydrogen, though it practically always does contain other things, we will pass on to the consideration of what products, had those other things been absent, would be yielded,—must be yielded, on combustion. Given an adequate supply of air during combustion, the results would be two; simply carbonic acid and water. There would be no smoke, the development of which always means that a sufficiency of air to effect perfect combustion has not been admitted, neither would there be any carbonic oxide, an invisible gas-like carbonic acid, but only holding half the quantity of carbon. In respect to these two products, the most prominent fact to be noted is the production of water. When coal, coke, or charcoal are burned, water is not a product of combustion; but illuminative gas, oil-lamps, spirit-lamps, candles, all yield water. The fuel use of all these, except gas, is limited; but gas-stoves are frequent enough as instruments of ordinary domestic arrangement. They yield no smoke, and on that ground alone the general public take it for granted that they yield nothing to contaminate the air. Go into almost any business office where a gas-stove, from motives of convenience, has been installed, and you shall, in nine cases out of ten, see a pan of water placed on the stove. Water, of all things! You ask the reason,—"To moisten the atmosphere, which, without this precaution, becomes uncomfortably dry, giving us headaches." Yes, hard-headed business man, you have a headache, and no wonder. A hundred pans of water, notwithstanding, you will keep your headache all the same. The gas-stove combustion contributes water enough of its own and to spare. The explanation of headache is the presence of carbonic acid, which might easily enough, together with the second product of combustion,—water,—have been disposed of by a flue. Whenever a gas-stove is burned without a flue it must always be prejudicial, not to say to comfort, but to health as well. Small

excuse can there ever be for not adopting a flue, which is of far easier application than when ordinary coal or coke stoves are in question. We want no metal, no fixing, no elbow-joints. A sufficient length of vulcanised rubber hose is about the best material for the flue of a gas-stove. So long as the hose is so arranged as to be always on the ascent, its disposition is a matter alone for taste and convenience. At any rate, ordinary sheet-iron pipes are very objectionable, and pipes of zinc worse still, both for a reason which will hereafter become apparent. We have known builders so ignorant of chemical first principles that they have been in the habit of lighting up numerous gas flares in the chambers of houses newly built to dry them, and thus fit them for more speedy habitation.

Hitherto normal illuminative gas has alone been taken into account, but the gas actually supplied us by the gas companies is a very different matter. This latter, in addition to the components normally belonging to it, always holds adventitious bodies—contaminations. Thus sulphur is always present, not so frequently in the state of hydrosulphuric acid (which can be separated at the works, and mostly is separated), but as a constituent of carbon-bisulphide, the problem of abstracting which still awaits solution. Besides sulphur, ammonia is frequently present, carbonic acid and carbonic oxide generally. Sulphur is the element we have most to dread. The first result of the burning of sulphur is sulphurous acid, unpleasant in smell (that of a burning match), and a powerful bleaching agent. Unfortunately, sulphurous acid is not permanent. With a rapidity more or less dependent on circumstances, it absorbs oxygen from air and becomes sulphuric acid,—oil of vitriol. No assurance is needed to impress the fact that oil of vitriol is rapidly destructive to almost everything it touches. Especially destructive is it to bookbindings, hangings, paper, brass, iron. And pictures—what must be the effect of continually administered small doses of vitriol to them? The reader's own intelligence shall furnish a reply. We beg him to remember that given the constituents of illuminative gas as we have put them, the results of its combustion must be as we have indicated. They are neither to be evaded nor avoided: they are integral, inevitable. Ventilation is the only resource to fall back upon; but even ventilation, if perfect, would not wholly countervail the evil.

TYNEMOUTH AND NORTH SHIELDS.

ONE of the districts in the North of England which has united steady modern growth to ancient repute is that at the mouth of the Tyne, and no part more sustains that statement than does that of the joint towns of Tynemouth and North Shields. The former of the two has antiquity, and though North Shields as an important town is of modern date, yet it had existence before it acquired the distinction or the municipal government of a town, though as a humble fishing village. It may be well worth while to glance at the position of the parish of Tynemouth at the time when Parliamentary honour was conferred upon it of distinct representation and of a municipal corporation, and to see what it now is. In 1834 Tynemouth boasted its one good street, which during the bathing season was "a place of fashionable resort," and the walks in the vicinity presented, according to one of the chroniclers of the day, "many pleasing and romantic views." The principal object of interest was the castle of Tynemouth, which, though "shorn of its just proportions by the heavy and dilapidating hand of time, still presents remains of great architectural beauty." There were mineral springs and beautiful residences near, but the trade of the place was small and scant, though the growth of North Shields had swollen the population of the parish greatly. North Shields had a large trade in coal; it had also roperies, tanneries, potteries, chain-cable manufactories, and shipbuilding was also carried on, but the ancient and once chief trade of Shields,—that, arising from the salt-pans which gave names to so many places near,—was then decaying, and was "confined to only two establishments." The old church of Tynemouth was then the one place of worship for episcopacy, except the chapel-of-ease shortly before built in the market-place; but there were churches or chapels for the Roman Catholics, the Wesleyans, Primitive Methodists, Independents, "United Secessionists," the Society of Friends, and the Hebrews, so that Dissent in its many phases appeared to prevail in Shields. The Tynemouth General Cemetery in Rosella-place had been recently opened; the early gas-works,—commenced so soon as 1820,—were in operation with the still earlier waterworks; whilst in almshouses, dispensaries, schools, and institutions, there was an ample testimony to the public spirit of the little town. Though the borough was just being municipally created, the lord of the manor held "courts leet and baron at Easter and Michaelmas." The harbour is described as a mile and a half in length, and "in spring tides it has sufficient water for vessels of 500 tons burden." Under the then new Parliamentary franchise there were 700 electors; and whilst North Shields had a population of 6,744, the entire parish of Tynemouth contained 24,778 inhabitants. A list of the traders shows that three old banks,—Chapman & Co., the North of England Joint Stock, and Sir M. W. Ridley & Co.,—furnished financial facilities; there were five "coal-owners," including the "Right Hon. Lord Ravensworth & Co.,"—one of Stephenson's "Grand Allies,"—seven ship-builders are enumerated; but except for one "magnesia manufacturer," the chemical trade only figures in its retail aspect. The railway system had not been introduced; there were five or six coaches, an omnibus, and some gigs, which did the bulk of the conveyance of passengers. A number of carriers served the town; there were three sailing vessels conveying regularly to London; and three steam-packets, in addition to those crossing the river and running up to Newcastle. This, then, was the state of North Shields and Tynemouth at the time when the "House of Correction" was at Tynemouth; when the "Tradesmen and Mechanics' Library" was in Stephenson-street; and of the waterworks "George Rippon" is described as the "proprietor."

Electorally and in the population there is a very great change in the borough of Tynemouth now. In the 4,303 acres, the population of the Parliamentary borough was stated as 38,941 in 1871, the inhabited houses being 5,385, and the number of the electors being, in 1877, not less than 5,384. Those of the populace who were assessed to the income-tax were assessed at the large amount of 475,000*l.*, exclusive of the incomes derived from public bodies. As of yore, North Shields and Tynemouth form a great shipping port. In a year 500 vessels leave for foreign ports, with a tonnage of 250,000. To North Shields 469 vessels belong,—about one-half being steamers,—the total tonnage being 142,191 tons, and it is thus one of the largest of the shipowning ports of the kingdom. Not less than 437 "boats" are registered under the Sea Fisheries Act as belonging to North Shields, and it is supposed that these furnish employment for nearly 900 men and boys. It is not a ship-building port of note, from eight to ten small vessels being its yearly contribution to the total built in the kingdom; but from the figures above given, it is evident that North Shields takes high rank amongst the shipping ports of the kingdom. It still exports large quantities of coal,—from 30,000 tons to 50,000 tons monthly,—and it occasionally sends slight quantities to London and to southern ports; but the great bulk of the trade in this branch of coal-shipments is on "coally Tyne" from the higher ports on the river. The southern side of the lower reaches of the Tyne may be said to be especially the manufacturing side; but at North Shields there is also a very extensive commerce now carried on; and some of the manufactures indicated as on a small scale in the past of the town have grown with its growth.

Not the least interesting of the changes has been that of the river Tyne, which, within the last two score years, has been transformed from what it was into one of the chief commercial rivers of the world. Magnificent piers at the mouth of the river have been extended for thousands of feet into the sea; most important and costly works of dredging have been carried on; and a portion of the deepened and improved river has been converted into docks with facilities such as place it high amongst the ports of the world, and have given it a premier position in certain classes of trade. In a sentence, this result may be told in the fact that, whereas in 1850 the depth of water on the bar of the Tyne was only 6 ft., it is now upwards of 20 ft. deep at low water. As to dredging, it may be said that in 1857 the Lords of the Admiralty suggested that the Tyne Commissioners should be compelled to remove 400,000 tons annually, but over twelve times that amount have been removed in a year since. In one year,—in 1866,—not less than 5,273,585 tons of material were dredged. These works, added to the gigantic works of river improvement, have brought about that change in the state of the Tyne that we have indicated, and have also caused a large increase in the revenue of the Commission, and brought up the trade of the Tyne until now only the Mersey exceeds it in the export trades amongst the rivers of the world. Very naturally a share of the benefits reaped from this expanded trade has been derived by North Shields, and Tynemouth, as one of the residential places of the North, has shared in the benefits. As a pleasure resort, the latter boasts the possession of "one of the prettiest ruins in the North of England" in its priory of Early English style, with portions of a prior structure shown here and there, of Norman architecture. Recently,—two years ago,—it added to its attractions a magnificent aquarium, with summer and winter garden. The latter is 216 ft. long by 50 ft., the height to the centre of the arched roof being 50 ft. The aquarium occupies a lower story, and the basement floor is a refreshment-room and promenade entered from the beach. Detached from the main building is a skating-rink, 200 ft. by 125 ft., and from the proportions the whole buildings form, it may be readily believed that the total cost was above 80,000*l.* It is evident, therefore, that Tynemouth is placing itself in a position to attract visitors to itself as a sea-side resort. Of it and of its sister town it may be said that, as in the past, they have grown, and as the trade of the trading portions has grown, so in the future it may be hoped that, with that good regard to sanitary well-being and local government which has distinguished them, there may be continued prosperity, extension, and improvement.

ART TEXT-BOOKS: "GOTHIC AND RENAISSANCE ARCHITECTURE."

THE book thus entitled * is one of the series of text-books of art-education which are being brought out under the editorship of Mr. Poynter, R.A. It is not, as we learn from the preface, especially intended for architectural students, but rather for the requirements of those who are preparing for the professional pursuit of other arts, or who make the study of art part of a liberal education. The author has aimed, therefore, at giving the broad facts of the history of architecture, the principles which underlie it, and illustrations of its most typical examples.

A difficulty in treating Gothic architecture in this manner, in a brief and concentrated style, arises from the fact of the very close relation of early Gothic with Roman architecture, and the gradual and almost insensible manner in which the one passes into the other. In the early days of Gothic criticism, when it was imagined that the Crusaders saw pointed arches in the East, and came home and imitated them, the demarcation of the subject was simple enough; but no one who comprehends the history of architecture during the period between the decline of the Roman and the rise of the Mediæval world will now undertake to say in any positive manner where and when Gothic architecture precisely begins; the whole thing was a process of gradual development.

This continuous development is almost necessarily placed on one side in the present book, which is the continuation of a companion volume dealing with Classic and Early Christian architecture. This last-named volume, though naturally placed first on the series, is not yet published, but will follow, and it is only by comparison of the two that the development of Gothic architecture from Roman materials can be made out so as to be intelligible to the student. But in any case it seems a pity to have broken the subject in the middle, thereby confirming to some extent the popular idea that Gothic was a new birth of the Middle Ages. Renaissance architecture, which is included in this volume, has, on the other hand, no connexion whatever with Gothic, and may be rightly described as a kind of new birth in the art. It might have been possible to make the development of the subject more logical and intelligible to the reader (who is pre-supposed

* Architecture: Gothic and Renaissance. By T. Roger Smith, F.R.I.B.A. London: Sampson Low, Marston, & Co., 1880.

to be a person little informed on the subject, and seeking a statement of the outlines), by partially dropping the chronological arrangement and treating Classic and Renaissance architecture in one volume, and early Christian and Gothic in another. The skipping over of fifteen centuries between Classic and Renaissance would, in fact, have been nearly the correct representation of the position; for the Renaissance in architecture at all events, really was an ignoring of all the intervening centuries and their work,—a going back to where the Romans left off, and making a fresh beginning from that point. By such an arrangement of the subject, therefore, both Gothic and Renaissance, would have been brought before the reader in connexion with the origin of their respective development. As it is, the one volume does not explain itself without the other, and the second half of the present has little connexion, artistically or critically, with the first half. If it were thought there were insuperable objections to this, it might have been possible to divide the subject differently, and give Renaissance an extra booklet to itself, rather than group it with Gothic. Renaissance architecture, no doubt, immediately succeeded Gothic, but in this, as in so many successive series of events in this world, *post hoc* is not by any means *propter hoc*.

In pursuance of the intention of rendering the subject generally intelligible in its outlines, the method has been adopted of giving a general sketch of the characteristics of Gothic architecture first; then tracing its development in England (as the phase of its history best adapted for illustrating it to English readers), and subsequently following some of its specialties of form and development in other countries. This seems a logical and intelligible method. A glossary of terms is prefixed to the volume, but in regard to this there has been some little oversight. The glossary is headed on the pages, "Gothic Architecture," and it mainly refers to Gothic, but it contains also a few items which refer only to Classic architecture ("Architrave," "Attic," &c.), while there is no glossary of Renaissance architecture at all. We presume that the glossary of terms in Classic architecture is to be found in the other volume, and that this glossary is intended to supply the words used in this volume; but, then, it should have been printed separately as a glossary, and not headed "Gothic Architecture."

In the general article on the architecture of the Middle Ages, Westminster and Salisbury are illustrated as the typical cathedrals, and Jacques Coure's house, Warwick Castle, and some of the Grand Canal Palaces, as specimens of Domestic architecture. In treating of the development of the style in Great Britain, the author adopts Rickman's nomenclature, merely referring to that of Sharpe, which, though to our thinking much more intelligible and precise, has never established itself through the fact that it was not proposed until Rickman's had become a part of Gothic speech, so to speak. The analysis of the development of Gothic in England contains descriptions of all the principal features of a Gothic building, put very clearly; but we do not find always that the reason for some developments, the causes of which are very clearly traceable, is given in a sufficiently obvious manner. For instance, the gradual development of the clustered pier, and the subsequent absorption of the shafts into the body of the pier as mouldings, is described; but we do not find the real origin of the clustered pier, the artistic necessity of having separate supports for sub-orders of mouldings in the arch, quite clearly made out; the development of arch moulding and pier would have been better treated in connexion with each other, in order to bring this point prominently forward, whereas the two things are mentioned in separate chapters. Those who understand the subject already will see from one or two expressions that the relation of parts is present to the mind of the author, but it will not be obvious to readers who are coming to the subject with no previous knowledge. We mention the point because it might easily be amended in another edition. On the rest of these chapters of analysis no comment is necessary except that they describe the leading features of the style with a sufficient number of illustrations to render it intelligible. It is not quite correct to say that when the pointed arch was introduced for vaulting, "all difficulties vanished." The difficulties, both of the springing of the ribs from the cap, and of the uniting of their mouldings, meeting at various angles at the ridge, remained, and the former was not finally got rid of till the fan-vault was invented, which made all the curvatures and angles equal. More stress also might have been laid on the difference in principle between the constructive employment of the ribs in earlier vaulting, and the merely decorative use of them in the fan-vault. The fact that the ribs in the latter case are superficial is just alluded to in passing, but the unlearned reader will hardly appreciate the full significance of the change from this description.

The characteristics in which French Gothic differs from English are well brought out and illustrated in the chapter on "French Mediæval Architecture," and the peculiar richness of Belgium and the Netherlands in civic structures, showing some of the finest qualities of Gothic architecture in a different form from that of the cathedral, is duly recognised and illustrated. Among the illustrations of the book, the Town-hall of Middleburgh is given as a specimen of this class of buildings less familiar to average readers than some of the really finer buildings of the class which have been so much illustrated. Two other illustrations we have reproduced, as we suppose the author selected them, partly on the same account; they are not so well known but that they may be new to a good many of our readers. One of these, from Batalha, the author introduces as an illustration of the fact that "many works of the great Gothic period are as elaborate as they could be made," while the style has in other instances equally illustrated the extreme of simplicity. The doorway from Thann is a good example of the hard, precise, finished manner of German Gothic, with sculpture of apparently a high-class of excellence. The bit from Westminster Abbey may serve as a contrast in style with this, as well as being a favourable specimen of the execution of the illustrations. Mr. Roger Smith does not omit to point out the essential inferiority and vulgarity of the German Gothic ornamental detail, in spite of its elaboration of design and workmanship. The Gothic of Italy forms, of course, a separate chapter, which is one of the best illustrated in the book; and Spain is also separately but briefly treated. This part of the subject closes with a chapter on the "Principles of Construction and Design in Gothic Architecture," which are very well set forth, in a manner intelligible to every reader. We observe that in speaking of Gothic as being in the main the style in which construction is exhibited, the author comments on the fact that the stone vault, the most noteworthy and characteristic feature of the interior design, "makes no sign" whatever on the exterior, save in the presence of the buttresses which are there to support it. But it does not very readily appear how it could do so, except the timber roof were removed, and the vault made the external covering; which has, of course, been suggested as the true treatment of the stone-roofed building, but then the question is half a practical one in this case. The wall ribs might in some cases be indicated externally also, certainly.

Renaissance architecture is a much simpler subject to treat than Gothic. Its relations to the past are clear and well defined, and the aims of its architects are perfectly obvious; the more so because their tone and temper of mind were essentially modern, and what we can precisely comprehend and enter into at the present day; whereas we can only imperfectly understand the temper of the Mediæval builders, their aims or their system of working,—we are too far removed from them in time and in habits and associations. The special characteristics of Renaissance architecture are very well set forth, and in most of the critical remarks we entirely concur. The paragraph on the essential difference between Gothic and Renaissance architecture, in regard to the relation of design and construction, suggests a conclusion with which much recent criticism is at variance. We may quote the passage as a specimen of the style of the analytical portion of the book:—

"The concealment, both of construction and arrangement, is largely practised in Renaissance buildings. Behind an exterior wall filled by windows of uniform size and equally spaced, rooms large and small, corridors, staircases, and other features, have to be provided for. This is completely in contrast to the Gothic principle of displaying frankly on the outside the arrangement of what is within; but it must be remembered that art often works most happily and successfully when limited by apparently strict and difficult conditions, and these rules have not prevented the great architects of the Renaissance from accomplishing works where both the exterior and interior are thoroughly successful, and brought into such happy harmony that the difficulties have clearly been no bar to success. There is no canon of art violated by such a method, the simple fact being that Gothic buildings are designed under one set of conditions and Renaissance under another."

We are not quite prepared to endorse the conclusion that there is really nothing to choose in regard to propriety and correctness of principle between these two totally opposite systems of architectural design; but the position assumed by the author has its reasonable side, and is not without its usefulness as a set-off against the rather extreme manner in which the Gothic principle has sometimes been recommended as the only one consistent with reason and good taste. It is well observed that Renaissance architecture aims at producing an impression by the effect of the building as a whole; if it does not please as a whole, it is rarely felt to be in any way successful. We concur, too, in the remark that there is something in the manner of applying Classic details in Renaissance architecture in some cases which is rather Gothic than Classic in feeling, and was the unsuspected evidence of the surviving influence of Gothic taste on men who imagined that they had deliberately cast everything Gothic behind them. This was, in fact, the very reason for Michelangelo's disapproval of Sangallo's original design for St. Peter's; he said it was not true Classic. Michelangelo himself was too determined and thoroughgoing a character to take any half-views or fall in with any half-tastes, and accordingly he imposed "the order" on his great building regardless of the effect of scale. The author's critical view of St. Peter's is somewhat too favourable for our sympathy. The building is really an instance of what a powerful effect mere size has in architecture, in despite of bad and mistaken treatment. But in most respects the view given of the Renaissance school of architecture in this book is marked by admirable sense and judgment. No chapter on principles of construction and design is added to this part, as it is to the Gothic portion of the book. Is that a tacit admission that, after all, there is not much of "principle" in it?

ST. MILDRED'S, BREAD-STREET, LONDON.

IN connexion with the efforts of those who are seeking to interest the public in the safety of the City churches, we give a view of the interior of St. Mildred's, Bread-street, which was built from the designs of Sir Christopher Wren, in place of a previous church destroyed by the Great Fire of 1666. It was commenced a year after that event, and not finished until 1683. It differs from the majority of London churches, inasmuch as it is covered with a large cupola. The building is a parallelogram, with an ordinary tie-beam and king-post roof, the cupola, rising on pendentives, being formed within it. Where necessary for the rise of the cupola, the tie-beam, instead of being attached to the foot of each principal rafter, is raised about half-way up, and becomes, in fact, a collar-beam. The pulpit and sounding-board are well carved by Gibbons, or one of his pupils.

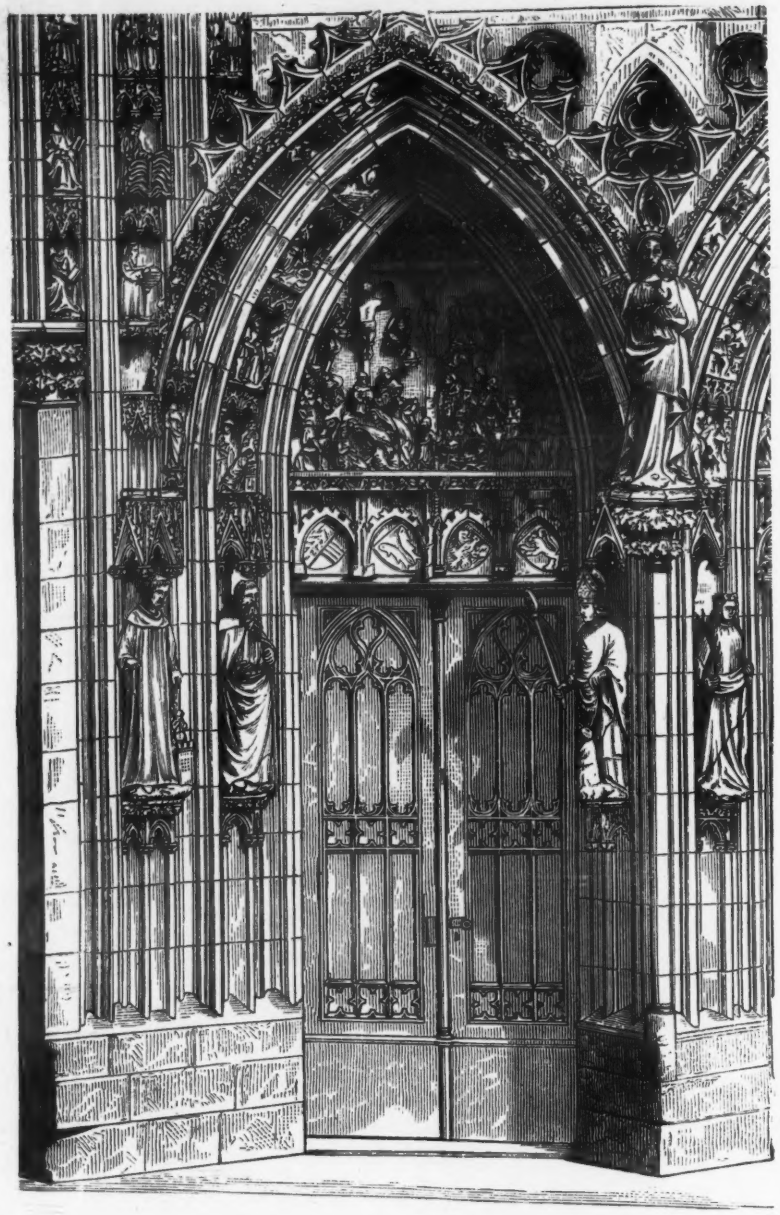
According to Godwin's "Churches of London" (vol. ii.), the cupola, as Wren left it, "was disfigured by ill-executed cherubim in high-relief, placed in pairs, and supporting crowns," but these do not now exist; they were probably taken away in 1856, when, according to an inscription in the church, the building "was repaired and beautified."*

The previous church dated from about A.D. 1330, and had been repaired throughout in 1628.

THE ENTRANCE LODGE AT DENZELL, BOWDON, NEAR MANCHESTER.

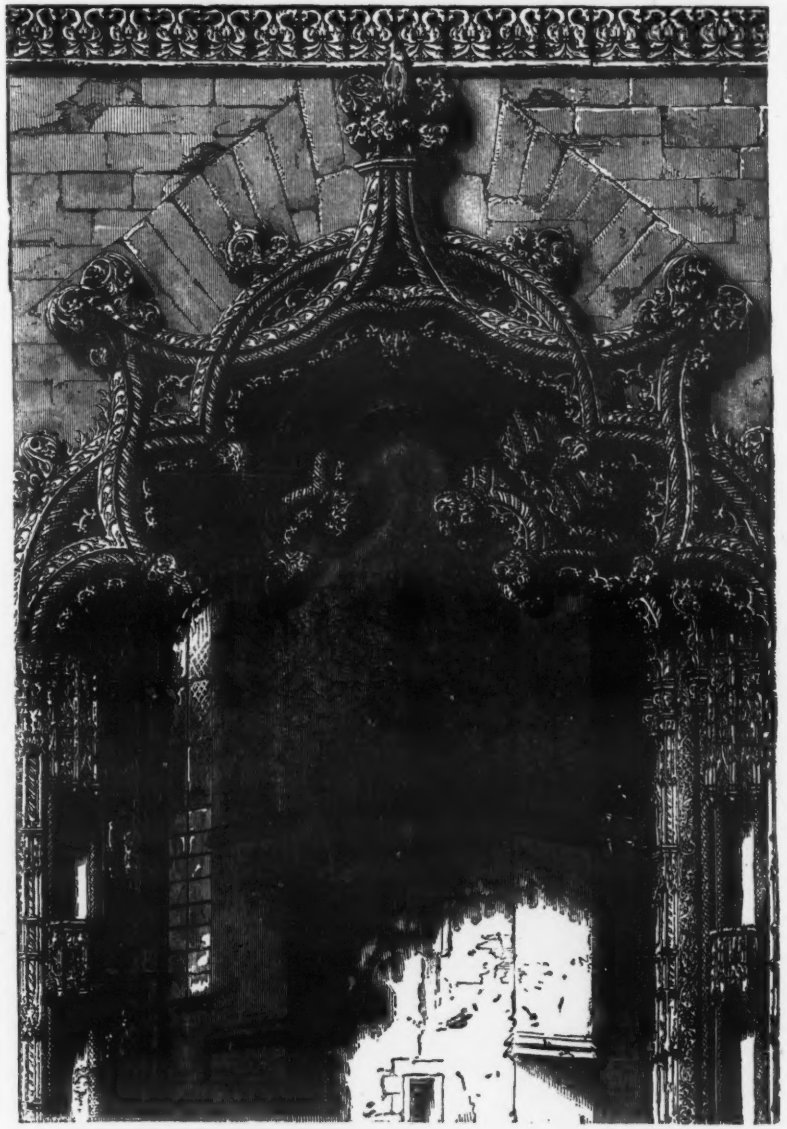
THE lodge, of which we give a view, was built for Mr. Robert Scott, of Yorkshire stone, with Manley stone dressings, and has cost about 900*l*. Messrs. Clegg & Knowles were the architects, and Messrs. Robert Neill & Sons the contractors. A view of the house itself will be given on another occasion.

* The drawing we have reproduced was made from sketches sent us by Mr. Randolph Payne, architect.

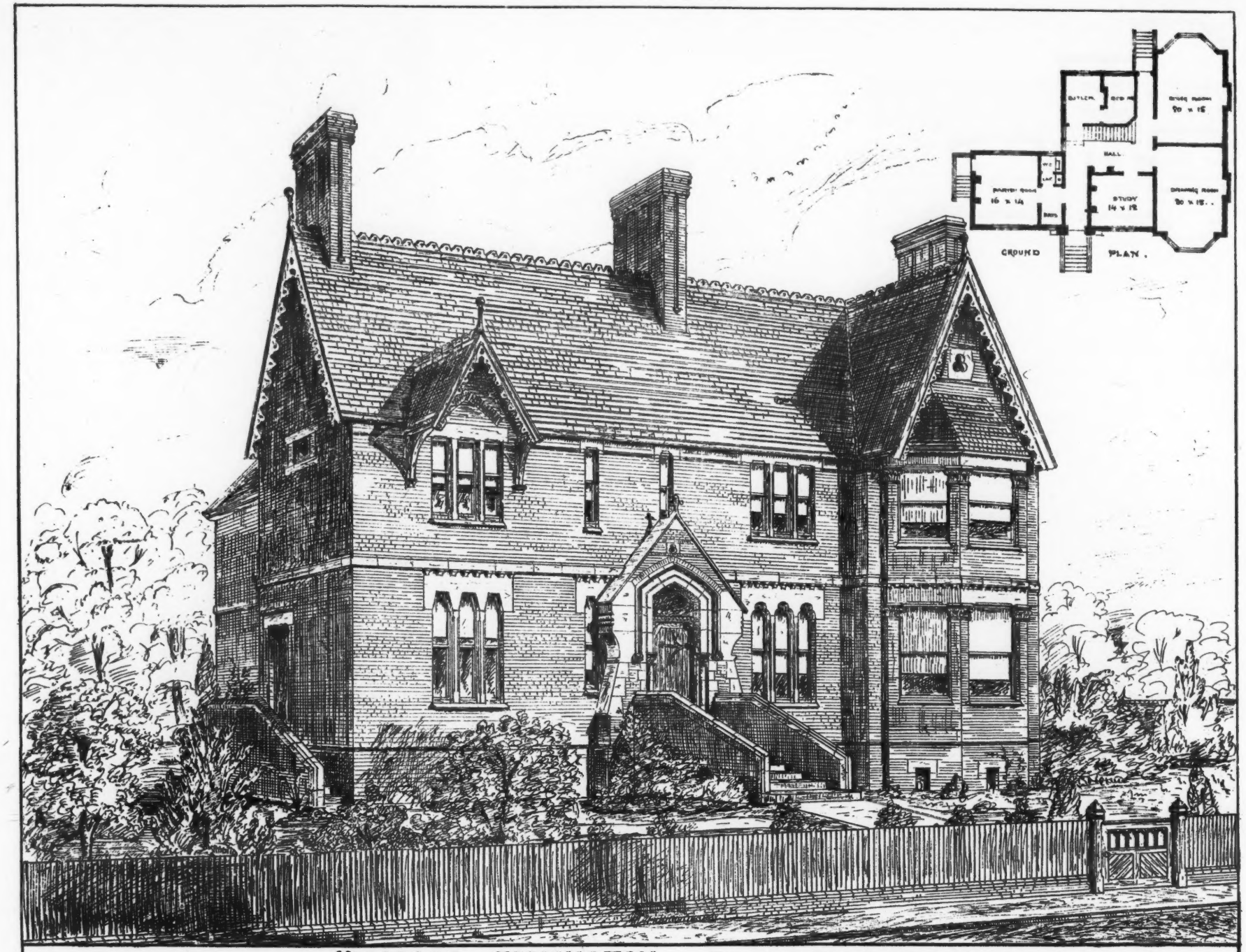


Western Doorway of Church at Thann (Fourteenth Century).

Sculpture from the Entrance to the Chapter-house, Westminster Abbey.



Doorway from Church at Batalha (begun 1385).



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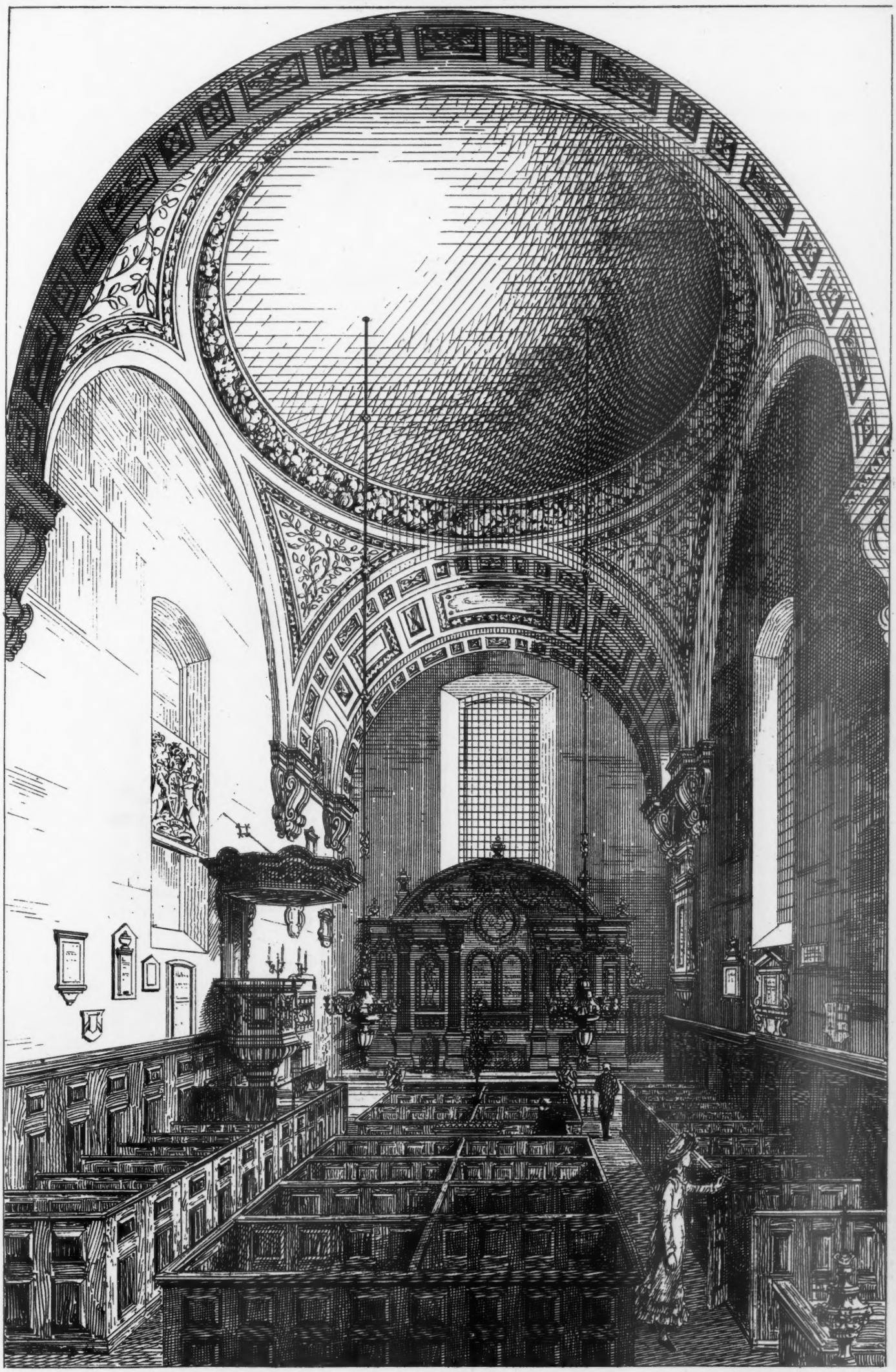
CHELSEA HOSPITAL FOR WOMEN, FULHAM ROAD, LONDON.—MR. J. T. SMITH, ARCHITECT.



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THE CHURCH OF ST. MILDRED, BREAD STREET, LONDON.——SIR CHRISTOPHER WREN, ARCHITECT.

Whiteman & Bass *Photo-Litho*

ENTRANCE LODGE AT DENZELL, BOWDEN, NEAR MANCHESTER.—MESSRS. CLEGG & KNOWLES, ARCHITECTS.

Wyman & Sons, Printers.

VESTIBULE, JOHANNISSTIFT, LEIPZIG.—HERR LIPSIUS, ARCHITECT.

CHELSEA HOSPITAL FOR WOMEN, FULHAM ROAD, CHELSEA.

THIS hospital was founded in the year 1871 for the reception and treatment of gentlewomen in reduced circumstances and respectable poor women and others suffering from those distressing diseases to which the female sex is liable, irrespective of social position. They are received upon the principle of requiring a small weekly payment from those in a position to afford it, while to the actual poor gratuitous treatment is freely given.

The recommendation of a subscriber entitles in and out patients to treatment without any charge whatever, except, in the case of in-patients, payment for the washing of their personal linen. When a patient is too poor to do so, this is also provided for out of the Samaritan Fund. The discomfort, from want of space, experienced by the suffering women who crowd the out-patient department, led to arrangements for obtaining a new building. The applications for admission are five times more numerous than the beds now available.

The land for the new hospital, situated opposite Neville-street, in the Fulham-road, was purchased in May, 1878; the plans have been prepared by Mr. J. T. Smith, of Parliament-street, and we give a view of the building determined on.

The foundation-stone of this building will be laid by her Royal Highness the Princess of Wales at half-past three o'clock on the 16th of July next.

The works throughout will be plain and substantial. The fronts will be faced with red brick, with Mansfield-stone to upper members of cornices. The floors will be of fireproof construction, finished with 1½-in. iron-tongued pitch-pine polished.

The whole of the joiner's work and fittings will be in polished pitch-pine. The walls will be in Parian, painted and stencilled. There will be open fireplaces to the rooms, fitted with asbestos gas-stoves, with pitch-pine and marble chimney-pieces, marble fenders, and tile hearths. The large yards, corridors, and staircases will be warmed by hot-water coils, and the whole of the rooms will be fitted with lavatories supplied with hot and cold water. The building will be seven stories in height, and there will be a car-lift from the lowest to the upper floor, supplied by Mr. Baldwin, of New York. The windows will be glazed with plate glass, having coloured glass in the bottom sashes, the height of an ordinary curtain. The sash-frames will be made to allow the bottom-sashes being raised 4 in., for inlet of air at the meeting-rails. The ventilation will be by separate 5-in. tubes (two or more to each room), carried from the ceiling to above the roof with Boyle's ventilators at ceiling level.

TEDDINGTON VICARAGE.

THE old vicarage-house, having been found unsuitable for the new vicar, it was determined to dispose of it, and erect a new one on a site three-quarters of an acre in extent, in Manor-road, overlooking the Manor House grounds, and near St. Mary's (the old) Church.

The house now illustrated is in course of erection, and is built of red bricks, pointed in black mortar, with dressings, mullions, strings, and copings of Westwood-ground Bath stone, the roof being covered with Broseley tiles, and everything throughout is intended to be of a thoroughly substantial character.

The general offices are in the half-basement, while all the reception-rooms and the Parish-room are on one level on the entrance-floor. The first-floor contains six bedrooms, with bath and dressing rooms.

The contractor is Mr. John Piller, of Teddington, and the architect is Mr. T. Goodchild, Adelphi, London.

The parish of Teddington has recently been divided into two portions for ecclesiastical purposes; one having the church of SS. Peter and Paul, while the other has the original mother church of St. Mary, recently restored. It is also proposed to provide for the immediate wants of South Teddington,—an out-lying district next Hampton Wick,—by the erection of an iron church.

The New Hall of the Scottish Corporation, Crane-court, Fleet-street, will be opened on the 21st inst. Professor Donaldson is the architect.

AN ABODE FOR THE AGED.

THE JOHANNISSTIFT, LEIPZIG.

AT the eastern end of the Hospitalstrasse in Leipzig, the eye is arrested by a large edifice, with a projecting central portion, surmounted by a slender spire, over the threefold portal a clock, and above this a window in coloured glass; the building is flanked by extensive wings. Notwithstanding its great size, it will at once appear that the building is neither a castle nor a factory, neither a prison nor a monastery. We may soon guess its object, for is not the sill of every window lighted up by white curtains, and enlivened by a row of flower-pots? And behind the well-trimmed pelargoniums and lobelias, the fuchsias and petunias, do we not see many a venerable human face? Pinks, also, and stocks, are not wanting, and many an aged man nurses an ivy, and many a silvery headed woman rests her eye upon a myrtle. We are in front of an abode of humanity and civic virtue, a foundation which is to be to old men and women of Leipzig, after a life's work, a home at once quiet, free from care, and yet without depriving them of the full enjoyment of civil liberty,—the new Johannisstift of Leipzig.

This foundation arose out of one of the nineteen thousand "lepers' houses" which were established in consequence of the steady advance of Eastern leprosy towards the West during the Crusades. Those "leprosoria" received usually many and rich legacies and donations from the relatives of the unfortunate inmates, and by the time that the disease had disappeared in the fourteenth century, the Leipzig Hospital of St. John had accumulated large funds. The property and buildings were then appropriated to their present purpose. The possessions of the foundation grew by careful acquisition or utilisation of freehold land to such an extent that, when the old buildings were no longer sufficient for their requirements, a round sum of 400,000 thalers (60,000*l.*) was at disposal for new buildings without reducing the ordinary income applied towards furthering the object of the foundation.

The Johannisstift offers to its inmates board, lodging, and firing, and at the same time complete quiet combined with perfect liberty for intercourse with the outer world. A claim to be received into the Johannisstift is possessed solely by Leipzig citizens and their wives, as well as those having acquired civic rights, who, with unblemished reputation, have attained their sixtieth year, and who are willing to subscribe to a duly-attested agreement, by which they promise to behave peacefully and decently, to obey the regulations of the trustees, and to abstain from all trading, as well as from disposing of gifts of the foundation (articles of food, firing, &c.). Each person admitted has besides, once and for all, to pay into the funds of the hospital a sum equal to 30*l.*, and to appoint the foundation the inheritor of whatever he or she may be possessed of at the time of death. Most persons entering the institution may easily agree to this last condition, for rich people do not seek admittance, but such old inhabitants of Leipzig from among the artisan class as are disabled for work by old age. They bring with them, besides the entrance bonus, very little more than their furniture, clothes, and so forth. In some cases deserving of especial consideration, the rules as to age and capital are relaxed. But should an inmate of the foundation inherit property during his stay, so that he could live independently, he is at liberty to leave the institution at any moment; he is, however, bound to refund for every year of his residence a sum equal to 12*l.*, and should the original investment of 200 thalers (30*l.*) not cover the expenses incurred, he must pay up the rest. Such cases happen frequently; indeed, widowed inmates have left the institution to enter once more the state of matrimony.

Even the register of deaths of the house affords some pleasant insight. Nothing speaks more favourably of the care with which the aged are attended to than the spans of life recorded. It happens very rarely that an inmate dies much *below* eighty; most exceed that limit. And this was the case even at the time when the farmers of the institution contracted also for the food, and the same fare was provided for both servants and inmates. This practice was abolished some time ago; the farming branch is now entirely separated from the foundation, the lands being all let, and the buildings of the old Hospital of St. John converted to other purposes, and rebuilt. Trading of any description has been entirely discontinued; the sole object of the institution being now the care of aged people.

The erection of the new Stift was under the supervision of Herr Lipsius, of Leipzig, architect, his plans having been selected for execution. Practical usefulness was his first aim; but he did not lose sight of the desirability of conveying by his design the object of the institution.

The completed buildings cover a space of 184,000 square feet (nearly 4½ acres). They are situated among the hundreds of small "family gardens," the property of the institution, in the Johannisthal, one of the most original, pleasant, and healthful grounds of Leipzig, which, unfortunately, are more and more entrenched on by communal and government buildings, and destined ultimately entirely to disappear. The principal building, consisting of a centre block, two connecting buildings, and two corner pavilions, is 478 ft. long; each of the two wings is 230 ft. long, by a depth of 50 ft., with a height to the ridge of the roof of 82 ft. The height of the centre block from the pavement to the ridge is 100 ft., and to the point of the spire 165 ft.

On both sides of the principal building are, isolated, to the left, farm buildings, including stables, pig-styes, slaughter-house, wash-houses, ice-cellar, and steward's rooms, as well as mortuary, dissecting-room, and auction-room: on the right the disinfecting-house.

The materials employed are granite, Postelwitz sandstone, and about five million bricks. The roof of the principal building, of an area of 74,000 square feet, is covered in with glazed tiles, the centre portion more richly decorated, the other parts simpler, in red, brown, black, green, and yellow tiles. The most troublesome work presented itself at the beginning, by the sloping nature of the ground, the latter being 24 ft. lower in the Johannisthal than in the Hospitalstrasse, towards which the front of the building is turned. No less than 4,320,000 cubic feet of material had to be brought here for filling up the ground. Notwithstanding all difficulties and delays, the work was completed in three years, and when, finally, the architect handed over the finished building to the trustees, he was able to announce that nearly 5,000*l.* less had been expended than the amount of the original estimate for its erection. The cost was 374,600 thalers.

Entering the building, we notice at once the fact that everything has been arranged to suit the age of the occupants. Ascending six stairs, the large vestibule is entered by the centre one of the three principal doors of the centre block, the vestibule taking up the whole height of the ground and first floors. Three similar doors on the garden side correspond to the front entrances. The stairs rise to the right and left upon arches to the first-floor of the principal building, and lead, in the first place, to ante-halls, being well suited for resting-places. Besides this principal staircase, of which we give a view, there is one in each of the two wings.

Above the vestibule of the centre block is the general hospital ward, and over this, again, the chapel in form of a basilica. In this manner the centre portion divides the building in such a manner that, should a separation of the sexes be thought desirable, this might be introduced at any moment. Let us ascend one of the staircases leading to the corridors. Here are, on both sides, the doors to the rooms of the inmates, a niche being opposite to each door, for placing a wardrobe. At the intersections of the corridors, in the centre of the pavilions, they are enlarged to rotundas, affording for the very aged capital resting-places, especially during bad weather. The openings also in the corridors, which admit side-light, are constructed as if made for social gatherings, being provided with fireplaces for the old people to make their coffee, as well as tables, sinks, and water-supply; they are also used for weighing and serving out the food.

The pains taken to ensure cleanliness are striking. The water-closets are separated from the corridors by double doors, and are disinfected. Their contents, as well as that of the refuse shoots, for which are special pits, pass to the same destination as the waste from the baths, the kitchen, bakery, the sinks, the hospital-ward, &c., viz., to the large collecting tank in the basement. From this the whole disinfected mass is pumped to the disinfecting-house and into the settling basin, raised 8 ft.

above the floor, whence the clear water runs into the street sewers, while the solid settlement is raised into a still higher basin, and thence taken away as valuable manure. The system here pursued, on a large scale, is that of Süvern.

It is well known how difficult it is to induce old people to open the windows to allow of the admission of fresh air. They are entirely relieved of that necessity, fresh air being introduced through screened openings behind the stove, to be opened and closed at pleasure, and ensuring ventilation with the corridor. The ventilation of the corridors, vestibule, chapel, sick-ward, kitchen, privies, &c., is ensured by suction-tubes in connexion with the chimney-flues, which take away the foul air, while fresh air, heated up to 12° R. in winter, is introduced direct. The warming of the admitted air is done by six *calorifères*, by Kelling, of Dresden. The rooms themselves are warmed by stoves, a space in the cellar or the loft being provided for each inmate for keeping the firing material furnished to him. Although gas is laid on all over the building, it is not supplied to the inmates, who burn oil-lamps.

Provision is made against fire, hose in connexion with the water supply being laid on throughout the whole building. There is also a lift for the very aged, or for those to whom moving up and down stairs is troublesome. The chapel is pretty, and the old people are much pleased with it.

A wonder in its way is the large kitchen, placed under the vestibule. It is 51 ft. long, 46 ft. wide, and 15 ft. high. The kitchener or hearth in the centre is the delight of all housewives who see it. Excepting for the large roasting ovens, which are placed at the sides, not a spark of fire is required for cooking; everything is effected by steam, which is supplied to the kitchen, the baths, the bake-house, and the four-horse-power steam-engine (for the disinfecting apparatus and the lift), from a boiler of a surface of 90 square feet, and a pressure of two atmospheres.

Two meals are supplied to the inmates, dinner and supper, and sent up to the different floors by the lift, and served out in the sidelights before mentioned. In order to give the old people some employment, they have to make their own coffee, which is not supplied to them; but an excess of bread rations, for the sale of which provision is made in the establishment itself. Thus the inmates enjoy rest, pleasure, and a little work. A man may also pursue his former trade or employment if he be so minded.

There are 214 single rooms, 54 double rooms for married couples, and 6 large rooms for several persons, which will together accommodate from 380 to 390 inmates.

THE CABINET MAKERS' ASSOCIATION.

THIS society was established in 1865. For a great number of years local societies had existed both in London and the provinces, but this was an attempt to effect a federation, if not a complete amalgamation, of the several independent societies in the various branches of the trade. The effort was so far successful that, by the end of 1874, as many as twenty branches had become affiliated.

The most notable event in connexion with the Alliance Cabinet Makers' Association, the name by which it is now known, was the prosecution of the five cabinet-makers in 1874, by Messrs. Jackson & Graham, for picketing their shops in Ogle-street, in the western district of London, during a strike. The men were convicted, and sentenced to "be imprisoned for one calendar month," by Baron Cleasby. The defence of these men cost the society 685*l.* 10s. 9d.; 154*l.* 4s. 5d. was spent in providing for the wives and families during their incarceration, and 137*l.* 18s. 5d. was presented to the men on their release from Maidstone gaol.

The rules of the society are open to revision every three years; when they were last amended the basis of future work was clearly laid down. The entrance-fees are fixed at a uniform rate of 4s.; the contributions are:—For trade, funeral, and emigration benefits, 5d. per week; for sick benefits, 2d. per week additional up to 35 years of age; and 1d. per week extra for every five years beyond that age. Insurance of tools against loss by fire is also extra, according to the amount for which they are insured.

The benefits are:—Out of work allowance, 12s. per week, with 1s. per week additional for every child under 13 years of age; funeral benefits range from 3*l.* to 7*l.* 10s., according to the period of membership, the increase being at the rate of 10s. per year after the term fixed, when they are entitled to the 3*l.* The amounts payable at the death of members' wives vary from 3*l.* to 5*l.* Strike-pay is 1*l.* 1s. per week, with 1s. per week additional for each child under 13 years of age. Travelling relief is given at the rate of 1½d. per mile. Sick benefit is 12s. per week for twelve weeks; by the payment of 2d. extra per week members are entitled to 8s. per week for another twelve weeks, should the illness continue.

The fourteenth annual report, 1879, just issued, consists of 84 pages, 34 of which are devoted to branch accounts; the remainder are taken up with tables, summaries, and miscellaneous information for the guidance of the members. At the close of the year the Association had 40 branches, seven of which were in London. In 1877 there were 48 branches, a decline of four in each of the last two years; the number being now the same as in 1876. The total number of members in benefit is 1,412, a decrease of 325 during the year. In 1878 there was a decrease of 299, a total loss of 624 in two years; for the whole of the previous nine years there was a steady increase annually. The cause of this decrease is stated in the report to be the slackness of trade, members working only three or four days a week, and many travelling in search of work.

The total receipts for the year (general fund) amounted to 3,054*l.* 14s. 7d., being an increase over 1878 of 415*l.* 10s. 1½d. The following were the chief sources of income:—Contributions, 2,105*l.* 12s. 1d.; sick fund, 368*l.* 18s. 9d.; insurance, 153*l.* 4s.; entrance fees, 60*l.* 1s. 6d.; the balance was from miscellaneous items.

The total expenditure for the year was 3,631*l.* 2s. 10d., an increase over 1878 of 890*l.* 10s. 5d. The principal disbursements were:—Out-of-work allowance, 1,852*l.* 13s. 11d.; strike pay, 557*l.* 17s. 10d.; sick benefit, 329*l.* 7s. 8d.; fire insurance claims, 119*l.* 16s. 7d.; funerals, 75*l.*; emigration and migration, 33*l.* 7s. 7d.; total, 2,968*l.* 3s. 8d.

Independently of the above 301*l.* 0s. 5d. was received by the local branches, and 307*l.* 18s. 5d. was expended; of the latter amount 234*l.* 6s. 3d. was paid in salaries to officers; 48*l.* 16s. 10d. rent of meeting rooms; 9*l.* 10s. was advanced to widows, and 2*l.* 0s. 9d. was spent in books for the library.

The executive accounts are given separately; the chief items of expenditure were:—Rent of offices, gas, &c., 10*l.*; secretary's salary, 58*l.* 10s.; meetings of executive committee, 33*l.* 5s. 9d.; treasurer, 1*l.* 10s.; deputations, 45*l.* 13s. 9d.; there is a further sum of 13*l.* 16s. 7d. put down for branch deputations; and 18*l.* 4s. 7d. expenses connected with disputes. The remainder was for printing, stationery, postages, telegrams, money orders, and sundry small items, including 7*l.* 10s. 3d. granted to the London Trades Council and to the Trades Union Congress Parliamentary Committee.

In this society there is usually a special collection in aid of the London hospitals annually, but this year, presumably in consequence of the depression in trade, it does not seem to have been contributed. In 1878 the amount so collected was 23*l.* 19s. 8d.; the year previous it was somewhat higher. Members are entitled to letters of admission when needed, in consideration of this yearly subscription.

The balance in hand at the end of the year was 693*l.* 5s. 6d.; at the end of 1878 it was 1,274*l.* 0s. 3d.; including the books and property of the association, the total worth of the society is stated to be 950*l.*,—this is exclusive of arrears due from members.

During the last twelve years the society has paid in benefits the following amounts:—Out-of-work allowance, 4,272*l.* 12s. 5d.; strike pay, 3,001*l.* 10s. 6d.; sick benefits, 1,705*l.* 10s. 11d.; funerals, 421*l.* 10s.; loss of tools by fire, 394*l.* 4s. 6d.; emigration and migration, 254*l.* 19s. 4d.; total, 10,050*l.* 7s. 8d.

For the purpose of aiding the members in their efforts to acquire a knowledge of artworkmanship, and of promoting a taste for its higher principles, libraries are formed in connexion with the several branches of the association. The books are lent out to the members on the meeting nights of the lodges, and all fines for the non-return of the books within the date specified, or for injury to them, are spent in purchasing additional books for the library. The total number of books belonging to the union, as stated in the catalogue, is 1470; the works are of a miscellaneous character, embracing art, science, history, political economy, and general literature.

The members of the society claim that they are entitled to a higher rate of wages than the artisans belonging to many other trades, on the ground that it requires a longer time to acquire the art of cabinet-making, and to become skilful in the craft, and also that the course of instruction is more costly than in most other trades. They furthermore contend that having to find an expensive chest of tools, and that these have necessarily to be continually replaced by others, either from the excessive wear and tear, or because of the frequent changes in the character and style of the work upon which they are engaged, and the nature of the material upon which they have to work, they are justified in seeking some higher remuneration. During the past year, it is asserted in the report, they have succeeded in the majority of cases in resisting attempted reductions of wages, and in maintaining the customs and privileges of the trade.

The society is a small one in comparison with many others, but it shows that it can adapt itself to the special wants and requirements of the members, and of the trade, by its efforts to develope a taste for artistic work, and by the promotion of technical instruction amongst its members. In this respect, at least, some of the older and larger societies might do well to follow the example set them by the "Alliance Cabinet-makers' Association."

THE SCULPTURES OF LYSIPPOS.

GREEK ART OF THE HELLENISTIC PERIOD.

MR. NEWTON'S seventh lecture* on Greek Art to students of University and King's Colleges was delivered on the 23rd ult., and treated of what he styled the Hellenistic Period, comprising the three centuries between the accession of Alexander the Great and the reign of Augustus. The last of the great sculptors of Greece was Lysippos. His statues appear to have been exclusively in bronze. His great celebrity might be partly due to the fact that his name came down to us associated with that of Alexander the Great, whose portrait he alone among sculptors was allowed by that king to make. Among his works were two colossal statues, one of Zeus (Jupiter), the other of Herakles (Hercules), in the city of Tarentum. An allegorical figure represented Kairos, "Opportunity," with a long forelock, while he was bald behind, in one hand a pair of shears, in the other a pair of scales. At Rhodes he made the Sun god, Helios, in a chariot group. He made statues of Alexander himself and of some of his companions in arms who fell in the battle of the Granicus. There are several extant busts or statues of Alexander, none of which, however, can be traced with any certainty to an original by Lysippos. He also made ideal portraits of great men of past generations, of whom no traditionary likeness had been handed down, such as the fabulist Æsop. Among his statues of athletes was a celebrated one, afterwards transported to Rome. This figure was represented scraping himself with a strigil, and was hence called the Apoxyomenos. In the Vatican is a marble statue believed to be a copy of this celebrated work. The Farnese Hercules, which we know from an inscription on its base to have been the work of Glycon, is also thought to have been derived from an original of Lysippos. Studying the canon of Polycletos, conjointly with nature, he constructed a new canon of proportions. To him was attributed the saying that Polycletos made men as they were, but that he made men as they ought to be, a saying which had been variously interpreted, and which seemed to point to some deviation from the normal type of the human figure as established by Polycletos, designed, perhaps, to correct the optical impression produced by statues on a colossal scale. If we turned from this meagre account left us by the ancients of the art of Lysippos to the extant monuments of his period, we had the lion erected by the Greeks after the battle of Chæroneia, B.C. 336; the sculptured column from the temple of Artemis (Diana) at Ephesus; the Dionysos (Bacchus) from the Choragic monument of Thrasyllos, B.C. 320; and a colossal figure of

* For summaries of preceding lectures see last volume of the *Builder*, pp. 644, 678, 774, 806.

Victory on the prow of a ship, found in the island of Samothrace some years ago, and now in the Louvre. Professor Conze, in his recent work on Samothrace, had given a restoration of this statue, and pointed out its striking resemblance to the Victory on a prow on the coins of Demetrios Poliorcetes. It was highly probable that this type on the coin and the statue found at Samothrace both commemorated the great naval victory of Demetrios gained at Salamis B.C. 305. If was after the siege of Rhodes by this same Demetrios that the Rhodians erected that colossal bronze statue of the Sun god which, from its immense scale, ranked as one of the seven wonders of the world. Pliny told us that it was 100 ft. high, and that few men could with both arms reach round its thumb. It was probably finished B.C. 284, and was thrown down by an earthquake fifty-six years after its erection. Its position at the entrance of a harbour at Rhodes is marked by some enormous blocks of stone near the fort of St. Nicholas. The tendency of art in the Hellenistic period was mainly towards the colossal and the sensational; but there was also a strong realistic tendency, shown in the portrait busts and heads of that period, and in what is told us about Lysistratos, the brother of Lysippos, who is said to have cast a man's face from the life, and then worked that up into a perfect likeness. The realistic tendency shows itself strongly also in the Pergamos school of sculpture which was created by the Attalid dynasty. The statue commonly called the "Dying Gladiator" and the group in the Villa Ludovici called Arria and Pætus were probably part of a great composition representing the victories of Attalus and Eumenes II. over the Gauls. A smaller set of figures, representing groups of Gaulish and Greek combatants, had been identified by Professor Brunn as copies of a set of sculptures dedicated by Attalus, at Athens, to commemorate his triumph over the Gauls. The group at Naples, commonly called the Farnese Bull, represented the tragic incident of the punishment of Dirce by Zethos and Amphion, and was, in spite of much restoration, a noble composition deserving of more notice than it had received. It was probably the original work which Pliny states to have been the work of two artists of Tralles, and to have been brought from Rhodes to Rome. The great work of the Rhodian school was the Laocoon. There was good reason to believe that we possessed the original group known to Pliny. The sculptures in high relief recently obtained by the Germans at Pergamum, and now to be seen in the museum at Berlin, were certainly works of the same school as the Laocoon, and were remarkable from their dramatic and almost modern character.

THE ROTHERHITHE NEW BATHS AND WASHHOUSES.

THE erection of new baths and washouses for the parish of Rotherhithe has just been commenced, and the foundation-stone was laid by Mr. F. C. Carr-Gomm. The new building will be situated at the corner of Gomm-road, Lower Deptford-road, and, besides the basement, will consist of two spacious floors. It will be faced externally with white Suffolk bricks, with Portland stone and terra-cotta for dressings and ornamentation. It will contain two spacious swimming-baths, the first-class bath being 90 ft. long and 30 ft. wide, the depth varying at each end respectively from about 3 ft. to 7 ft., and enclosed along the sides of the baths there will be fifty dressing-rooms. The second-class swimming-bath will be 84 ft. long and 30 ft. wide, fitted with forty-seven dressing-rooms. It will be the same depth as the first-class bath, the sides and the bottoms of each being lined with white glazed bricks. Besides the swimming-baths there will be twenty-six first-class and twenty-four second-class private baths, all fitted for hot and cold water. The washhouse department, situated at the south-west corner of the ground-floor, will have every accommodation for washing purposes, being provided with twenty-four washing-compartments, each having hot and cold water and steam, with drying-closet and steam wringing and other machines. The laundry portion will contain mangles, ironing-board, and other machinery and fittings; and there will also be a second laundry for the exclusive use of the establishment itself, from which lifts will communicate with each department. The women's private baths, which will be fifteen in number (seven first-class and eight second-class), will be on the first floor of the building, with a distinct and separate entrance from the Gomm-road frontage. The entrance to the waiting-rooms, swimming-baths, and men's first and second-class private baths will be in the centre of the Deptford Lower-road frontage. The superintendent's apartments and the commissioners' board-room will also be on the first floor of this frontage, whilst the engineer's apartments will be on the first floor of the Gomm-road frontage. The engineering and machinery will be in the basement under the wash-house, and will consist of a powerful engine, the boiler-room containing three boilers, each 24 ft. long and 6 ft. in diameter, for hot water and steam. Attached to the engine-room there will likewise be engineer's workshop and other necessary apartments. The whole of the floors throughout the building will be fireproof.

The architects of the building are Messrs. G. Elkington & Son, and the general contractor is Mr. William Shepherd, of Bermondsey New-road; Messrs. J. & F. May, of High Holborn, being the contractors for the engineering works. The entire cost of the buildings will be about 25,000*l*.

THE ANTIQUE SCULPTOR.

He brooded awhile, then seizing
Mallet and chisel, he made
A chase in the block of marble
Within which his fancy play'd.

He had before him no model,
But the form his mind's eye drew,
Yet out of that block of marble
The image he sees will hew.

Deftly with mallet and chisel
He toils with unrest alone;
Month after month to embody
The child of his brain in stone.

As seed in the soil in spring-time,
As bud bursting into flower,
Peering out that block of marble
The image grows hour by hour.

Tireless and anxious, the sculptor
Still labours, and with effect;
The statue at last is finish'd,
And the hero stands erect.

The world has honour'd the artist,
And his work has won him fame,
But Art is the greatest gainer,
Art, honour'd in his name.

Our artists fashion a model,
But the ancient sculptor knew
How, out of the block of marble,
The child of his brain to hew.

Work not for the age, O Sculptor,
But carve for all time to come,
And live like the great Art-workman
Of ancient Greece and Rome.

C. C. H.

COPYRIGHT IN CAREFULLY-PREPARED STATISTICS.

AN important copyright case has lately been decided by the Master of the Rolls, in Ireland, which will interest not a few of our readers. Mr. William Fleming, whose useful "Index to the Railway System" we have reviewed on several occasions of its annual issue, sought an injunction to restrain Mr. Charles Eason, publisher of the "Almanack and Handbook for Ireland," from including in that work tables of railway statistics, which were, Mr. Fleming alleged, pirated from the "Index." Six counsel, four of whom were Q.C., argued the case. The Master of the Rolls, in giving judgment, said that the case was one of very great importance, not only to persons involved, but as to the declaration of the law. The little book first published by Mr. Fleming in 1877 was apparently very unattractive, because it contained only a bundle of figures; but, when studied, it carried conviction to the mind. The Master of the Rolls said that it was on reading the article in the *Edinburgh Review*, which was referred to in the case (that on railway profits and railway losses, published in 1876), "that he, for the first time, became enlightened on the subject of railway profits and railway losses to an extent he could not here sufficiently describe." His Honour stated further that the "Almanack" of Mr. Eason had been in existence for some time before the publication of the "Index," and had contained railway statistics in a form that made them perfectly useless. But after the publication, by Mr. Fleming, of his tables, Mr. Eason had taken six tables from the "Index" and incorporated them in the "Almanack," adding several other railways. His Honour entirely acquitted Mr. Eason of any idea that he was stealing Mr. Fleming's property; but had come to the conclusion that the whole of the tables complained of had been bodily copied from the "Index," and that no clearer case of infringement of copyright had ever come before a court. The value of Mr. Fleming's book was shown in a special note about it in the *Edinburgh Review*, and it was also alluded to as valuable and interesting by other publications, among which the *Builder* may be named. The judgment was that Mr. Eason must be restrained from selling, or offering for sale, any copy of the "Almanack and Handbook for Ireland," containing any portion of the tables formulated by Mr. Fleming, and must, in addition, pay all the petitioner's costs up to and including the present hearing. The case is fully reported in the Dublin papers. The words we have cited are those of the *Freeman's Journal*.

OBITUARY.

The late J. J. Lyons, Architect.—The death of this gentleman took place at his residence at 1, St. Dominick-street, Dublin, on the 22nd ult., after a few days' illness, from inflammation of the lungs. The deceased was one of the pupils of the late Mr. J. S. Mulvany, the son of the biographer of James Gandon, the architect. Mr. John J. Lyons early started in practice for himself, and having a literary taste, contributed for a time to this journal. His first journalistic periodical ventures in Ireland were short-lived, and he then started the *Dublin Builder*, designed as a monthly professional organ. After a few short years his connexion with that journal ceased, and the *Irish Builder*, under new conduct, took up the interests of its forerunner, extending its advocacy to a wider range of representation. The early professional career of the deceased architect was promising, and he secured some profitable commissions in a varied class of work, though little of a very high character; but for several years past his commissions were intermittent, and his practice was of the most limited and cheerless nature. He had his failings, and was conscious of them to a certain extent, but he seemed powerless to overcome his one besetting sin, which his friends and early patrons deplored. The deceased, though he never might have become a great architect, could have lived a useful and fortunate life, but it was not to be, and his story, as with many others, is that of a wasted life. But as unto Cæsar we should give what belongs to Cæsar, let it be stated to the credit of Mr. Lyons that in his earlier years he had the true interests of his profession at heart, and exercised his abilities to elevate the status of his profession in Ireland. It was through his efforts the dead or dormant Royal Institute of the Architects of Ireland was revived many years ago, and its scattered elements were brought together. After its resuscitation, he acted for some time as secretary to the Institute; but unhappy days came soon, the particulars of which we have no intention of giving here. The deceased was the eldest son of the late Mr. John Lyons, who formerly held an appointment in connexion with the Four Courts, Dublin. A wife and some children survive the deceased, who passed away at a comparatively early age;—sinned against, perhaps, as well as sinning; and who is there without fault to cast the stone at his erring brother?

CASES UNDER THE METROPOLITAN BUILDING ACT.

HEIGHT OF ROOMS IN ROOF.

AT Hammersmith Police-court John Harvey, a builder, was summoned by Mr. Knightley, the district surveyor of Hammersmith, in respect of rooms which he had constructed in five houses in Hawthorne-terrace, Shepherd's-bush, contrary to the Act. The defendant said they were box-rooms, and not intended for habitation. Mr. Knightley said the rooms were approached in the usual way by staircases. There were windows in the rooms. The defendant pointed out that there were no grates in them.

Mr. Partridge held that the rooms were not habitable, and made an order to stop them up.

ROMAN VILLA AT MORTON, ISLE OF WIGHT.

BY MR. C. ROACH SMITH.*

THE discovery of the Roman villa at Carisbrooke opened a new prospect for the archæology of the Isle of Wight, which is now widened by the disclosure of another, on the slope of an elevated field called "Ten-Acre Field," on Morton Farm, near Brading. For this we are indebted to Captain Thorpe, whose tastes happily led him to investigate the early remains in the neighbourhood of his residence at Yarbridge. Captain Thorpe, having secured permission and co-operation from the tenant, Mrs. Munns, directed excavations which have laid open several apartments of a building which must have been of considerable extent; but, at present, its entire dimensions are unknown, as the excavations have not gone beyond the property in the holding of Mrs. Munns. In the course of a few months it is probable that further researches will be made, as Lady Oglander, the proprietor of the adjoining land, has kindly countenanced the projects of a few ardent antiquaries anxious to complete the researches so auspiciously commenced.†

The villa, although in itself it may present no very novel features beyond a pictorial pavement with unusual designs, is of the highest interest as regards the Roman history of the island; and no one with an educated mind can stand upon its ruins and look around him without being inundated by a train of reflections on the state of Vectis after its subjection by Vespasian, in command under Claudius; how soon it became Romanised; and upon what terms the conquerors made their yoke so light that they lived in security in the midst of a subjected warlike people, who, unless with the loss of freedom they had gained more than an equivalent, might have overpowered the new settlers at any moment. No military force, it would seem, was permanently allotted to the Island; and, therefore, it must be presumed that the arts and civilisation of the intruders were welcomed here as in the whole of the South of Britain. Then, what was the condition of the inhabitants under the new government exacting tribute, the grand incentive to the mighty and expensive armaments sent from far Italy to remote Britain? No doubt, as Tacitus remarks, peace was achieved by making the petty kings and rulers instruments for the subjection of their own people by immunities and honours. The province became soon, in every respect, more productive and prosperous, and the people more contented and happy than when, with nominal freedom, they were subjected to constant wars under rival and restless rulers, such as the native princes are represented to have been.

The villas at Carisbrooke, at Combly (on the north of Arreton), and at Morton, give indications, over a wide extent of ground, of the state of Vectis under the Romans. Then, as now, we may assume, flocks and herds grazed the hills and meadows; the ploughman ploughed the fields, the sower sowed, and the reaper reaped them. Then, as now, the duties of the seasons followed each other with fluctuating success; there were imports and exports; among the latter very probably chalk from the long-disused pits which lie along the downs throughout the island. The deposits of coins of Arcadius and Honorius, at Cliffe and Wroxhall, are a testimony in another direction of late occupation; and it is impossible to say what may yet lie buried when so much hitherto unsuspected has been brought to light in so short a space of time.

The pavements are very inferior to those of many villas; we may say to most of those published by Lysons, Artis, and others, such as have been found at Woodchester, Cirencester, Frampton, Lydney, Pitney, Thraxton, Bramdean, Bignor, and London; and, indeed, they may be called of a third class. One, however, presents certain novelties as regards the subjects, not the execution, which is inferior, although not wanting in spirit. It is square. On the western side are two gladiators, one with a trident, the other with a net, in combat. The corresponding design to this has been destroyed. On the north is an animal like a fox, under a tree, which, if intended for a vine, as has been conjectured, is a very poor representation. A building with a cupola completes this picture. On the south, by the side of a small edifice with a flight of steps, stands the figure of a man with the head and feet of a cock, and on his right, at a little distance, two griffins. In the centre is the head and bust of a Bacchante; and similar figures fill the two angles which are preserved. Each of these holds a sceptre or staff, at the top of which is a small cross, such as is held by deities or nymphs in the Pitney pavement. One of the other rooms is floored in a chequer pattern; and another with plain white tesellæ; the passages and borders in coarse red. From the fragments preserved it is evident that the wall of one of the rooms was painted in a superior and elegant style with birds and foliage.

Acquaintance with the ornamentation of Roman villas decides that much was left to the experience, means, and imagination of the *tessellarii*, or professed workers of these figured floorings. The same subjects are continually found repeated in widely-distant localities; sometimes treated with consummate skill and taste, and elaborately pictured. In other instances, as in the Morton villa, there is an incongruity assignable to the causes to which I have alluded.

The remains of the arch of a hypocaust are to be seen below the westernmost room, not yet fully excavated; and in the walls are flue tiles *in situ*. From the large quantity of broken flue tiles, it is apparent that some of the other apartments were heated. These, as well as the large flanged tiles used for various purposes, show skill in the making and burning quite as great as that evinced in the Roman tilework of Italy itself; and this uniformity is universal. The same remark may be made on the mortar; and to a certain extent on the pottery.

The villa was roofed with a thin slaty stone, roughly cut into hexagons, and fastened with iron nails. It could have been only of one story in height, but width commensurated; and it will probably be shown by further excavations that the building was extensive, and surrounded with the usual appendages to the *villa rustica*. The situation is extremely fine. The downs at the back stretch from Brading to Arreton; on the left, across the low land (over which Captain Thorpe believes he has discovered an ancient ford), is Yaverland and the sea, with Sandown and Shanklin; and in the front and to the right a wide extent of the picturesque island scenery. At no very great distance on the border of the marsh land runs a bridle road to Arreton, which, it may be safely assumed, was a *via* in the time of the Romans.

The excavations have disclosed but few objects of art such as are frequently found under similar circumstances,—a proof that no sudden calamity overwhelmed the villa, but confirmatory of its having been tenanted, probably for a long time after the Roman period. From a quantity of ashes and the blackened state of the white tesseræ, it appears that a fireplace had been made in one of the rooms. When it became utterly deserted most of the building materials were carried off; and then, for centuries, it remained a ruin, until the slow and sure processes of nature covered the foundations and allowed the unsuspecting plough to do its annual work. The skull of a female which has been exhumed may be attributed to an early Mediæval interment.

Only four coins have been found, all in small brass. The earliest is of Gallienus; two of Tetricus; and one of Allectus, with the reverse LAETITIA AVG., a galley; in the exergue, Q.C. The coin of Allectus, intrinsically of no great value, could but contribute to reflections while standing upon the ruins of this nameless villa, with the deep blue sea in the distance, upon which sailed the fleet in the last hours of his sovereignty over Vectis and Britain, powerless and unable to help when it might have turned the scale once more in his favour.

Mr. Nicholson has had a photograph taken of the ornamental flooring; and Mrs. Thorpe has made coloured drawings.

* This will form a portion of part iv. of his seventh volume of "Collectanea Antiqua," not yet issued.

† At the head of these are Messrs. J. E. Price, F.S.A., and Cornelius Nicholson, F.S.A., and, it is hoped, Captain Thorpe.

ROTHERHAM BATHS COMPETITION.

SIR,—Can you or any of your readers tell me the result of the above competition? On the 5th of May last a "committee in council" selected six out of the designs sent in. These were to be on view (to members of the Corporation only) for a fortnight, and then the committee were going to make a selection. Since then I have heard nothing,—rather a lengthy fortnight. Considering that the designs have been in since the 25th of March last (over thirteen weeks), I think it is high time, and only fair to the respective competitors, that the decision of the committee should be made known without any further delay.

AN INTERESTED PARTY.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

A SPECIAL general meeting of the donors and subscribers to this Institution was held at the offices, 27, Farringdon-street, on the 29th of June, Mr. B. C. Fox (of Mr. E. Conder's) occupying the chair, in the absence of the president, who was unable to attend. At this meeting Mrs. Sarah Ann Coulson and Mrs. Mary Ann Olver (being the only eligible candidates) were duly elected to the full widows' pension of 20*l.* per annum without ballot, the liberal support accorded to the Institution on the occasion of the annual dinner at the Guildhall Tavern, on the 6th of April last, fully warranting the committee in adopting this course. The meeting closed with a vote of thanks to the chairman.

DWELLINGS FOR THE POOR.

THE Charity Organisation Society have reappointed their Special Committee on Dwellings for the Poor, to inquire and report on the working of the Artisans and Labourers' Dwellings Act. At the first meeting of the committee it was resolved,—That a sub-committee, consisting of Sir U. Kay-Shuttleworth, Sir Curtis M. Lampson, Mr. H. R. Brand, M.P., Mr. Ernest Hart, Mr. T. Hughes, Miss Octavia Hill, Mr. W. M. Wilkinson, Mr. R. D. Wilson, be appointed for the purpose of collecting and circulating amongst the general committee the documentary evidence already on record, and of arranging for the attendance of expert witnesses to confirm and supplement such documentary evidence.

It was agreed that evidence should be taken more especially on the following points:—(1.) The causes of delay in carrying into effect the Artisans and Labourers' Dwellings Improvement Act, 1875. (2.) The causes of expense in carrying out the Act. (3.) Overcrowding.

Since then the Rev. D. Greatorex, of St. Paul's, Whitechapel; Mr. Gladding, the chairman of the District Board for Whitechapel; Mr. Gatliff, secretary to the Metropolitan Association for Improving the Dwellings of the Industrial Classes; Major-Gen. Scott, managing director of the Victoria Dwellings Company; Mr. Wm. Glasier; Mr. Moore, secretary to the Improved Industrial Dwellings Company, and others, have given evidence.

LARGE SALES OF BUILDING LAND.

DURING the past week there have been several extensive sales of plots of building land on estates which are being laid out for building purposes immediately around the metropolis. Amongst these the British Land Company held a sale a few days ago, at the George Inn, Maze-hill, Greenwich, of seventy-one plots, on one of their estates, situate close to Greenwich Park and Blackheath. The estate was said to command extensive views of the river, and to afford good sites for the erection of residences, the stipulations being that the value of the houses to be erected on the estate was to be not less than 500*l.* and 750*l.* Mr. W. H. Collier conducted the sale, and of the entire number of plots offered forty-four plots were sold at prices ranging from 100*l.* to 240*l.* each plot, the entire proceeds of the sale amounting to nearly 5,000*l.* On Thursday week Mr. Collier also offered for sale, on behalf of the same company, twenty-five plots of building land on one of their estates at Dulwich, situate near Lordship-lane, Honor Oak, and Peckham Rye. The several plots offered were stated to have frontages of about 60 ft., and an average depth of from 300 ft. to 320 ft. Thirteen of the lots offered were sold at prices varying from 225*l.* to 280*l.* each, the whole realising upwards of 3,200*l.* No house is to be erected on any of the plots of a less value than 400*l.*

On Thursday evening, the 24th ult., a sale of freehold building land, on the St. Thomas's Estate, Brentwood, was held by Messrs. Protheroe & Morris, at the White Hart Inn, Brentwood. The property offered was until recently a nursery, but has now been laid out for building upon. It consisted of fifty-three plots, having frontages of 20 ft. and a depth of from 80 ft. to 120 ft. each, the value of the buildings to be erected not to be less than 300*l.*, 400*l.*, and 500*l.*, respectively. In addition to the plots of building land above named, there was also offered in one lot a freehold residence and shop adjoining the estate, with garden, nine greenhouses, and a peach-house, in full bearing.

This last-named lot was sold for 1,600*l*. Nearly the whole of the different plots of the building land were sold, those facing the high-road averaging 10*l*. per foot frontage, and those facing the several new roads 6*l*. 10*s*. and 4*l*. 15*s*. per foot frontage.

Last week a sale likewise took place of seventy-nine lots of building land on an estate laid out for the purpose at Wood Green. The several plots were described as having frontages of 20 ft. each, varying in depth from 70 ft. to 120 ft. Mr. R. J. Collier conducted the sale, when sixty out of the seventy-nine plots were sold, the prices ranging from 50*l*. to 70*l*. per plot.

On Monday evening last Mr. R. J. Collier also held a sale of forty-eight plots of building land on an estate at Edmonton, the several plots having frontages of 16 ft., with an average depth of 90 ft. The whole of the plots offered, with two exceptions, were sold, the average price realised for each plot being about 25*l*.

SALE OF BANKING PREMISES IN CORNHILL.

ON Friday, the 25th ult., the leasehold building in Cornhill, which is occupied by Messrs. H. S. King & Co., bankers and East India agents, was offered for sale at the Auction Mart, by Mr. Frank Lewis, by direction of the Court of Chancery. The building, which has recently been erected, is very lofty, consisting of six floors, besides a basement. The premises are held direct from the Grocers' Company, on a lease for a term of which nearly seventy years are unexpired, at a ground-rent of 1,100*l*. per annum, and underleased for the whole term to Messrs. King & Co., at the annual rent of 2,100*l*., showing a profit rental and a net income of 1,000*l*. a year. The property having been bid for up to 13,750*l*., the auctioneer opened the sealed document containing the reserved price fixed by the Court of Chancery, on which he declared that the property was sold, observing that the purchaser had secured an excellent bargain in obtaining upwards of seven per cent. upon the purchase-money during the next seventy years the 1,000*l*. of net annual income being clear of all charges on the property, as the occupiers are under an engagement to do all repairs and insure. It transpired after the sale that the property had been purchased by Messrs. King & Co., the under-lessees.

THE "INNER CIRCLE" RAILWAY COMPLETION SCHEME.

THE action by the Metropolitan "Inner Circle" Completion Railway Co. *v.* The Metropolitan Railway Co. and The Metropolitan District Railway Co. (tried in the Exchequer Division on the 28th of June, before Baron Huddleston, without a jury) was to recover more than 50,000*l*. upon an award. The defendants, upon several grounds, disputed the validity of the award.

The plaintiffs' case was based upon the Metropolitan and District Railways (City Lines and Extensions) Act, 1879, which provided that the two defendant companies should jointly or severally, on or before the 1st of October, 1879, pay to the Link Line Company, meaning the plaintiffs, or deposit for them with the London and Westminster Bank, such sum or sums, not exceeding, in the whole, 50,000*l*., as might be agreed upon, or, failing agreement, as might be settled by arbitration, in respect of disbursements and liabilities, *bonâ fide* and properly incurred by the plaintiffs in projecting and obtaining the several Acts of Parliament relating to their company, and in giving effect to the powers conferred by such Acts, together with a reasonable remuneration for the directors and officers of the plaintiff company. The parties could not agree as to the sums to be paid or deposited, and an arbitrator having been appointed, on the 27th of September, 1879, he awarded that the defendants should jointly or severally pay or deposit 50,000*l*. in respect of the matters mentioned in the Act, besides paying the costs of the reference and two-thirds of the costs of the award.

The defence was that the arbitrator had exceeded his jurisdiction, that the award was uncertain in its terms, and that the arbitrator had awarded sums which were not within the meaning of the Act of Parliament.

At the conclusion of the arguments,

The learned Judge held that the plaintiffs were entitled to 52,490*l*. 14*s*. 9*d*., but stayed execution to enable the defendants to appeal.

Oscott (near Birmingham).—The "Northcote" Hall, at St. Marie's College, Oscott, near Birmingham, is now about to be completed, from the designs of Messrs. Pugin, of Westminster. The cost will be about 2,500*l*. Messrs. W. Sapcote & Son, of Camden-street, Birmingham, are the contractors.

SURVEYORS' CHARGES AND TAXED COSTS.

IN a case in the Common Pleas Division, Harstons *v.* Scott, heard before Mr. Justice Grove on Friday, the 18th ult., the plaintiffs, who are surveyors, sued for 50*l*. 1*s*., balance of account for services rendered to the defendant in connexion with a claim made by defendant against the London and Blackwall Railway Company, which was referred to the arbitration of Sir Henry Arthur Hunt, C.B. The defendant by his pleadings set up that the plaintiffs should be paid only that portion of their claim which he had received from the railway company on taxation of costs, but he did not appear, nor was he represented at the trial.

Mr. Justice Grove, in directing the jury, observed that although he could understand, under some circumstances, a solicitor agreeing to take taxed costs, yet it was most improbable and somewhat absurd to think that a surveyor would make any such arrangement, as taxation between party and party was quite independent of his charges, and was a proceeding in which he had no voice.

The jury gave a verdict for the plaintiffs for the full amount.

INFLUENCE OF CHURCH ARCHITECTURE.

WITH reference to a brief notice in our last issue of a lecture given by the Rev. J. Sheepthanks, Mr. Thos. D. Barry says he was misunderstood by the reporter. Mr. Barry writes,—"The lecturer, in the course of this paper, made observations to the following effect:—'The people loved to worship in buildings the very *atmosphere* of which seemed to lift them above the petty and grovelling things of their worldly life.' Also, 'there is *an atmosphere* about a *truly devotional church*, which, without the calling in of any illegitimate means, *makes salutary impression upon the people*, and disposes their minds to prayer.' And again, '*a devotional building* disposes men's minds to reverence.' It was on the statements that mere material beauty or proportion had anything to do with *saving impressions* or *devotional reverence* that I joined issue with the lecturer, believing as I do that no building can be called a *devotional* building, or that there is any connexion whatever between mental or sensuous aspirations, and spiritual worship, or 'the disposition of the mind to prayer.' Respecting the glorious churches of the Middle Ages, I expressed a hope that when a cathedral was built in Liverpool, it should be in our own National style, and on the lines of those beautiful structures which we have around us. I agreed with all that the lecturer claimed for beauty, proportion, and suitable ornament, but differed (as did many others) with the 'atmospheric influences' attributed to merely æsthetic excellence."

STRENGTH OF STAFFORDSHIRE BLUE VITRIFIED BRICKS.

THE issue of careful experiments showing the strength of building materials is always interesting and useful. We therefore print the following results of experiments made by Mr. Kirkcaldy to ascertain the resistance to a gradually-increased thrusting stress of six bricks received from the Cakemore, Causeway Green, &c., Brickworks and Colliery Company, at Rowley Regis, near Dudley:—

Test No.	Description.	Dimensions. Inches.	Base Area. Square In.	STRESS IN POUNDS WHEN		
				Cracked Slightly.	Cracked Generally.	Crushed, Steelyard dropped.
O 2,100	Blue Brick. (No recess.)	2·85. 8·75 × 4·20	36·75	238·400	354·000	425·820
2,098	do.	2·85. 8·75 × 4·20	36·75	233·500	350·600	422·560
2,097	do.	2·85. 8·75 × 4·20	36·75	229·200	344,000	418·220
2,096	do.	2·85. 8·75 × 4·20	36·75	211·000	332·000	414·400
2,095	do.	2·85. 8·75 × 4·20	36·75	208·000	321·000	409·330
2,099	do.	2·85. 8·75 × 4·20	36·75	202·400	318·600	387·940
	Mean		36·75	220·417	336·700	413·045
	Lbs. per square inch			5·997	9·161	11·239
	Tons per square foot			385·6	589·1	722·7

Bedded between pieces of pine three-eighths inch thick.

A QUESTION OF LIABILITY FOR PAYMENT.

CASLAKE *v.* BYWATERS.

IN the Queen's Bench Division, on Monday last (before the Lord Chief Justice and Mr. Justice Bowen), Sir Hardinge Giffard, Q.C., moved in this case (mentioned in last volume of the *Builder*, pp. 776, 809) for a rule *nisi* for a new trial on the ground that the verdict, which had been given in favour of the plaintiff for 1,346*l*., was against the weight of evidence, and also on the ground of misdirection.

The plaintiff is a plumber and mechanical engineer, and the defendant is a well-known builder. The case arose out of the construction of the Junior Army and Navy Club, which had been built under a contract between the defendant and Captain Elliot. With reference to certain parts of the work,—among others an iron staircase,—there were stipulations that these should be taken out of the hands of the defendant, the builder, and should be done by other persons named by Mr. Dudley, the architect. It was stipulated that the defendant should pay for such works and receive a profit of 15 per cent. on the net cost. The plaintiff first brought his action against Captain Elliot, who went into liquidation, and upon this he abandoned that suit and instituted the present one. Mr. Justice Stephen, before whom the case was tried, refused to construe to the jury the contract between Captain Elliot and the defendant, and, as the latter contended, if his Lordship had not refused to do this it would have appeared that the liability was to have been incurred by Captain Elliot and not by the defendant.

The Court granted the rule *nisi* on both grounds.

SIR,—My attention has been called to a letter from the defendants' solicitors published in your last issue, the statements in which greatly surprised me, and many others who heard the evidence. I will not remark upon the course taken by a firm of solicitors who publish a letter while, as they state, "steps are being taken to review the verdict." But I may state that one of the questions left to the jury was, "Did the defendants employ the plaintiff?" and the jury, after very little consultation, came to the decision which your paper reported, and which to every person who heard the evidence must have appeared the only just verdict they could give.

ARTHUR T. HEWITT, Solicitor for the Plaintiff.

BAD BUILDING IN EDMONTON.

On Monday last, at the Edmonton Petty Sessions, Mr. W. R. A. Cole, of High-road, South Tottenham, was charged, upon four summonses, with infringing the bye-laws of the Edmonton Local Board of Health, inasmuch as he was erecting four houses in Town-road, within the district of the Board, the walls of which were not properly bonded and solidly put together with mortar or cement. William Gimson, of Bayceaux Villa, Gipsy-hill, Norwood, was also charged, upon eight summonses, four with a similar offence as that alleged against Mr. Cole in respect of four houses in course of erection in Jeremy's Green-lane, and the remaining four that the walls of the said houses did not rest on solid ground, concrete, or other solid foundation, as required by bye-law 101.

Mr. Houlder, clerk to the Local Board, conducted the proceedings. The summonses against Mr. Cole were taken first.

Mr. Houlder stated that the walls of the houses in question were built of very inferior materials. Small pieces of bricks had been used, and the mortar was largely in excess of the quantity required to execute work properly. Bonding together meant that bricks should bond each other, but in the present instance they did not do so. There was so much bad building going on, that the Local Board were compelled to interfere, and they hoped the Bench would inflict such a fine as would induce builders to comply with the bye-laws, so that houses which would become detrimental to the health of the inhabitants as well as dangerous to those who resided in them might not in future be erected.

Robert Harrison, assistant-surveyor to the Board, said the walls were constructed of bats and smaller pieces of bricks. There were eight or nine courses without any tie whatever. One course of bonded bricks was laid every few feet, and the intervening spaces were filled up with small pieces. The work was intended for Flemish bond, but there was no real bond at all.—By Defendant: The mortar was of fair quality. A builder was entitled to erect concrete walls, but the system of construction which was being pursued certainly did not render the walls as strong as concrete ones.—By Mr. Houlder: The bonding ought to be every other course of bricks.

Mr. Grindle, chief surveyor to the Board, said the

mortar was good, but the bricks were the most inferior he had ever seen. The walls were not bonded, in the true sense of the word, except by the tenacity of the mortar.—By the Bench: Having regard to the safety of persons who might occupy the houses when finished, he should pronounce the walls insecure.—Defendant said he had expressed his willingness to do anything the surveyor to the Board might suggest to remedy existing defects.

Mr. Abbiss inquired if anything could be done, short of pulling down the walls, to secure the safety of occupiers.

A discussion arose, in the course of which a suggestion was made that the necessary strength to the walls could be given by having them coated with cement; and eventually an adjournment for three weeks was ordered to see if any scheme could be devised and carried out to the satisfaction of the Board's surveyor, the Bench intimating that, as the offences charged had really been committed, it must not be understood that a fine would not be imposed.

In Mr. Gimson's case it was shown that the spot where the buildings were being erected was not very solid ground, and that the plans sent in for the approval of the Board provided that 12 in. of concrete were to be laid to form the foundations of the houses, whereas the amount put in was only from ¼ in. to 4 in. in depth. The substance itself, too, was of a very inferior quality. The mortar, also, was exceedingly bad, consisting of very small portions of sand and lime, the rest being vegetable mould. Samples of mortar were produced, and the Bench said they could scarcely detect the presence of sand or lime.

Defendant said every ingredient for making good mortar was upon the ground, and if the material was bad, it was owing to the negligence of persons in his employ.

The Bench said bad materials were used by many builders to save a little money, even at the cost of loss of character. The magistrates would assist Local Authorities as far as possible to ensure the erection of proper buildings; and in the hope that others would take warning by the result of the present case, defendant would be ordered to pay 2*l.* 10*s.* in respect of each of the eight summonses,—20*l.* in all,—with costs, the amount, if not paid, to be recovered by distress.

PARLIAMENTARY JOTTINGS.

Indian Railway Bridges.—In the House of Commons, on Monday last, Mr. Anderson asked the Secretary of State for India whether the Report on Indian Railways for 1877 correctly stated the name of the firm who contracted for the railway bridge across the Nerbudda river; whether that firm were not also contractors for the principal ironwork of the Tay Bridge; and whether, under these circumstances, he had considered the desirability of providing that the Indian Government should institute an investigation as to the quality and kind of iron used for the Nerbudda Bridge, and also extend their inquiry to the Indus Bridge and other bridges built or being built on the guaranteed and State railways of India. The Marquis of Hartington: In the Report on Indian Railways for 1877 the name of the firm who contracted for the railway bridge across the Nerbudda river is correctly given, and the firm mentioned is the same as that which is stated to have been connected with the supply of the principal ironwork of the Tay Bridge. The contract for the bridge was made by the Bombay, Baroda, and Central India Railway Company, in April, 1877. The Tay Bridge disaster occurred towards the close of last year. The plans and specifications of the Nerbudda Bridge were prepared by Sir John Hawkshaw, and the whole process of supplying the ironwork has been carefully watched and inspected under his direction. Upon the occurrence of the breakdown of the Tay Bridge, the directors of the company gave special directions to Sir John Hawkshaw to be most particular in carrying out the duty of inspection. No complaints have been received from India of the quality of the iron, but a second examination is made there, and severe tests are applied to the piers and the girders when placed in position. There can be no doubt that the engineers employed in designing and constructing bridges in India since the Tay Bridge disaster have been fully alive to the necessity of the most careful specifications being prepared, and of the most conclusive tests being applied to materials before they are accepted. I will take steps for obtaining a special report on the Nerbudda Bridge before it is opened for traffic.

The Electric Light.—Mr. Daniel Grant has given notice that he will ask the First Commissioner of Works whether he will take into his consideration the advisability of substituting the electric light for the purpose of illuminating the House in place of the gas now used in the roof.

Mr. George Jennings.—A correspondent, writing from the Sydney Exhibition, April 24th, says:—"I have much pleasure in informing you that Mr. G. Jennings has won the highest awards, viz., first for stoneware drain-pipes, &c.; first for hydrants and water-fittings; first for pumps; and first and special for sanitary wares: thus beating all those who copy his inventions in the old country. Here he has nothing to fear, for they prefer men who originate to those who copy."

ARCHÆOLOGICAL NOTES.

Cup-marked Stones.—Mr. Jolly, H.M. Inspector of Schools, Inverness, seeks to throw some light on the origin of the cup-like depressions in stones, several of which have of late been discovered by Mr. Linn, of the Geological Survey, in the rocks *in situ* on the hill of Rosseisle, near Burghead, on the Califer hill at Forres, and in other localities. Mr. Jolly says that one of these depressions resembles in general appearance what would be produced by inserting an egg a third of its length into soft dough, only they have been formed in hard rock, and vary in size from half an inch in diameter to four inches and above it. In 1864 a detailed dissertation on these curious remains of prehistoric art or worship was read by Sir James Simpson before the Edinburgh Antiquarian Society, and was subsequently published in 1867. The neighbourhood of Inverness has numerous examples of these cup-stones. Within a radius of twenty miles in Inverness Mr. Jolly has obtained sketches of forty-five cup-marked stones hitherto unfigured, and these will be described, with illustrative drawings, at the first meeting of the next session of the Edinburgh Antiquarian Society.

Earthworks in Worcestershire.—The Worcestershire Naturalists' Field Club recently visited Thornbury, near which place, on hilly ground, is a castrametation called Wall-hill. The vallum is very lofty and steep. Mr. E. Lees read a short paper on the subject by Mr. H. H. Lines. Mr. Lines described the camp as presenting a combination of Roman and later British work, having an area large enough to hold 4,000 men easily. It is 1,220 ft. long, by 650 ft. in breadth within the ramparts. There are two original gates of remarkable width, one on the south-east corner, 60 ft. wide between its two crests, the other gate on the north-west end of the camp 50 ft. between the crests, and these gates possess neither Roman nor early British character, and their extraordinary width is remarkable. In addition, there are four openings, which appear to be of subsequent formation. On the western side are two yew trees growing on the line of the rampart, which has been diverted from its proper line in order to leave them outside the camp area, as though they grew where they stand before the camp was made. On the eastern side is a breach in the rampart of 90 ft. in length, where the earth has entirely disappeared, probably carted away, as Duncomb has stated has occurred with regard to several other lines of entrenchment. Mr. Lees said this castrametation was called the Wall-hill, from *waal*, a Saxon word signifying a stranger, and the Saxons gave this name to all those fortified posts that were occupied by the Romano-Britons, whose place of retreat they called *Wealas* or *Wales*, and no doubt this ground had been occupied and defended by the Welsh. Mr. J. Tom Burgess, who said that he was familiar with ancient earthworks, was of opinion that this was an original British work, showing no sign of Roman occupation, and Wall Hills he considered a term generally applied to ancient fortifications all over England.

SOCIETY FOR THE PROTECTION OF ANCIENT BUILDINGS.

THE third annual meeting of this society was held in the Hall of the Society of Arts, John-street, Adelphi, on Monday last.

The annual report stated the Society's work during the past year had differed little from that of the previous one, except in two notable instances, viz.,—St. Alban's Cathedral and St. Mark's, Venice. The committee had, as before, received information, written letters of inquiry, protest, and advice, "sometimes with obvious and encouraging results, sometimes with nothing apparent to show for the trouble." The committee believe the Society's principles are taking root, and especially, they think, are influencing the great body of our architects; "a course of events which is both very encouraging, and what might have been expected." A Society having a similar aim to this has been set on foot in France, under the auspices of M. Guillon, an honorary member of the Society. Among the cases in which the Society has taken action during the past year the report mentions Chesterton Church, near Cambridge; St. Germain's Cathedral, Isle of Man; Aldborough Church, Suffolk; Prestbury Church; Studland Church, Dorsetshire; five pre-Reformation churches in Exeter; Malmesbury Market Cross; and the Old Town-hall, Leicester. At Chesterton, St. Germain's, and Studland, proposed schemes of restoration have, it is stated, been abandoned; whilst those of Aldborough and Prestbury have been greatly modified. The proposal to pull down the Exeter churches has fallen through; Malmesbury Market Cross has, it is claimed, been protected from "restoration"; and the old Town-hall at Leicester has been saved, for the present at least, from demolition. Sir Edmund Beckett having offered to re-build the whole west front of St. Alban's Cathedral, the report states that the committee saw no other course open to them but to make one last protest to save what was still left unrestored of the Abbey,—

"They co-operated with Earl Cowper and Mr. John Evans in opposing the faculty which Sir Edmund Beckett was applying for in the Bishop's Court. The committee regret to state that their opposition was unsuccessful, and that Sir Edmund Beckett has obtained his faculty; and though the committee have been informed that an appeal lies to a higher Court, they do not think it advisable under the circumstances to carry the matter further. The committee cannot refrain here from drawing the attention of the Society to the fact that no tribunal exists in this country before which any proposal for the alteration of a public and national monument can be dealt with from the point of view of the effect such alteration may have upon it as a work of art or an historical monument."

With regard to ancient buildings abroad, the report detailed the steps taken by the committee to protest, on account of the danger to the mosaics, against the project of the Italian Government to bodily lift the Baptistery at Ravenna some 3 ft.; and also referred to the controversy *in re* St. Mark's, Venice.

CHURCH RESTORATION.

THE Church of Broughton Sulney, in Nottinghamshire, has been opened by the Bishop of Nottingham, after undergoing extensive restoration. The external works comprise a new and enlarged north aisle. The walling is built of Bulwell stone. The roof is of red deal, stained and varnished, and covered with lead. Internally, a gallery at the west end has been removed, and the tower arch opened out. A new window has been put in the west end of the tower. The chancel arch, which had been built up, has been cleared out and restored. The chancel was restored some thirty years ago, but was quite hidden from the church. The pulpit is of oak, with stone base; the prayer-desk is of oak; and the benches throughout are of pitch deal, varnished. The aisles are paved with tiles, and the font occupies a prominent position at the west end. The walls throughout have been denuded of plaster, restored and painted, and in carrying out this portion of the work an interesting discovery was made in the south wall, where one of the old arches of a Norman arcade, with pillars and capitals, was found in a fairly good state of preservation, and it has been judiciously treated so as to form a leading feature in the chancel. The only entrance-door in the south side was of a nondescript character, and it has been replaced by a Norman doorway and door in character with the arch under which it stands. Two new windows in the south wall have completed that side, and the whole harmonises well together. The church is heated by Porritt's hot-air system. The works have been carried out from the designs and under the superintendence of Mr. R. W. Johnson, architect, of Melton Mowbray and Kettering, by Mr. Brickmore, of Bingham, who has carried out the works very creditably.

State of the Underground Railways.—The walls of the stations of the underground railways require thorough cleansing and re-whitewashing, or painting, not simply to make them decently respectable, but to place them in the sanitary condition in which such places should be carefully maintained. The tunnels also are in need of measures to purify their foul interiors. It would be a most regrettable circumstance if these important lines should fall into a neglected state, and again awaken anxiety in the public mind. It is impossible, in the nature of things, that they can ever be as bad as they were before the tunnels were ventilated by openings at suitable intervals, and houses were demolished to give them air space, both which reforms were effected by the intervention of the press years ago; but there is still room for improvement, and of late the condition of the stations, and the general state of uncleanliness which prevails, do not satisfy the most modest demands.—*Lancet.*

CHURCH DECORATION.

Norton Lees, near Sheffield.—The church of St. Paul has just been simply decorated, the chief artistic work having been expended on the chancel wall, roof, and roof-panels. The wall over the altar-table has been divided into three panels, the central one of which is occupied by a figure of the Saviour, with uplifted hand, in the act of blessing. St. Peter and St. Paul respectively occupy the side panels, with auxiliary embellishments. The paintings and decorations are by the firm of Powell, Bros., Park-square, Leeds.

Margaretting, Essex.—Mr. Thomson, of St. George's-road, Southwark, has just completed the decoration of the east end of Margaretting Church, Essex, under the superintendence of Mr. F. Chancellor. In the two sides are emblems of the Lamb and Flag, on the other side that of the pelican feeding her young. They are surrounded by a rich border. On the top part is the dove, and sacred monograms on coloured grounds. The whole of the decoration is on a rich vellum ground.

Scarborough.—The Westborough Unitarian Church in this town, Rev. D. Agate, minister, has been re-opened, after renovation and partial decoration, its walls having been previously white and bare. The chief artistic work is at the east end, in the part corresponding with the ordinary chancel. Here, instead of a window, is a large recessed panel, now divided into three compartments, in each of which is a figure of one of the three Christian graces, "Faith, Hope, and Charity," painted in strong outline, with the addition of but little colour, and relieved by a dull gold screen. Within a pointed arch above the figures the sun is rising above the dusk shadow of night, the brighter stars yet shining in the heavens. On the arch itself, in letters of gold, is the legend from 1 John 1-5, "God is light, and in Him is no darkness at all." The reredos of the altar beneath bears the legend, "God is love." The wall-spaces on either side of the figures, and above the arch, are suitably ornamented with strong bands of coloured scroll-work, dividing a more delicate diaper. A rich dossal hanging, an ornamented surbase, a dado round the whole church, and a slight band of ornament emphasising all the windows, complete the design. The work has been carried out by Messrs. Powell, Bros., under the superintendence of Messrs. Holtom & Connon, architects, Leeds.

LEWANICK CHURCH.

THE parish church of the little Cornish village of Lewanick, situated some five miles from Launceston, has just had its chancel restored. Lewanick Church is, in the main, of the Perpendicular type of Gothic architecture; but the Decorated doorway at its western end, and some other remains, are indicative of an older church, built probably upon the same lines at some earlier period. On plan the building consists of the western tower, a chancel, north and south porches, and a spacious nave and two aisles, joined the one to the other by arcades. The building is principally of granite, of a rough moorstone, very like granite, and of the well-known Cornish Polyfant stone, which is procured from a quarry scarcely a mile away. The arcades dividing the nave and aisles are highly-wrought and fine examples of Polyfant masonry, and the roofs, which are of the wagon type, exhibit effective wood-carving. One of the chief glories of the edifice consists in the fine old benches, with which the main portion of the structure is filled. The seats in question are of the local type, made of English oaken planks fully 4 in. thick; their ends are carved, and, by a legend upon one of them, we learn that it was in 1546 they were erected. The angle seats at the head and foot of each aisle are surmounted by carved angels, cut out of the same oak. The font stands at the western end, and dates from the thirteenth century. The avenues between the seating are wide, and are laid with old Delabole slates.

The most remarkable thing about the church is the miniature font-like stone that stands near the inner door of the north-west porch, and immediately against the adjacent seating. It is a cresset-stone, a very rare piece of ecclesiastical furniture, so exceedingly rare, indeed, that it is very questionable whether another example exists in any parish church in England. Some 20 in. high, by 18 in. in diameter, its shape resembles that of a font, save that, instead of one basin, the bowl contains seven holes, each some 3 in. wide and as many deep. These cup-like cavities, in ancient days, were filled with oil or tallow, and were provided with wicks, so that at early morning service or after dark at night, the seven lamps were lighted for the convenience of worshippers. This curious cresset is made of Hicks Mill Greystone, of precisely the same character as the Norman font, and is probably as old.

The chancel has just been put into a seemly state by the present vicar. The chancel-walls have been denuded of their many coats of white-wash, and the stones beneath have been carefully pointed. The old plastered and stuccoed inner roof has been removed, and the wagon-typed shape of the original nave-roof has been carried on right through to the east wall. The roof springs from newly-carved and embattled wall-plates in oak; the moulded ribs and purlins are of the same material, and their intersections are stopped with carved bosses. The panels are lined with oak boarding. The fine four-light east window has been faithfully restored; new moulded mullions have been put in, in the same material as the original window—grey granite,—and, wherever it was necessary, the rest of the window has been repaired. The old altar-rails, which were of a Jacobean type, have been modified and refixed.

The altar-table is new, and of massive English oak. A reredos has been erected. It is of Bath stone, a parallelogram in form, and surmounted by a richly-carved and pierced cresting. Immediately over the altar-table are sculptured representations of the four Evangelists, and at each side are panels, in which are carved lilies in pots. Upon the reredos is incorporated a brass, upon which is inscribed the legend, "To the glory of God, and in loving memory of Edward Archer, of Trelaske, Esquire, and Charlotte Catherine, his wife, parents of the Rev. Charles Harward Archer, vicar of this parish, 1880."

The various works have been carried out by Mr. Harry Hems, of Exeter, under the personal superintendence of the Rev. Charles H. Archer, the vicar. Mr. Archer, it is interesting to add, is a great-grandson of the celebrated architect of the last century, Sir William Chambers.

LORD MOUNT TEMPLE AND COMMONS RIGHTS.

SIR,—At the public meeting held yesterday at Willis's Rooms by the Commons Preservation Society, the noble chairman, Lord Mount Temple, with characteristic modesty, refrained from referring by one word to the very prominent part he had himself taken in the preservation of commons, parks, and other open spaces. A similar reticence, I regret to say, was observed by all the other speakers. Suffer me now to be the mouthpiece of thousands,—should I not rather say of millions?—and remark that Mr. Cowper-Temple's eloquent advocacy of these unmistakable reservoirs of health dates as far back as March, 1844, when, in company with our now illustrious Premier, he supported Lord Worsley's Enclosure of Commons Bill, in which the rights of the people to commons land were emphatically recognised. During the thirty-six years which have elapsed since then, Mr. Cowper-Temple has done wonders as the valorous champion of open spaces, of commons, parks, and village-greens, which, as he truly contended, have done more to promote the happiness of the English people than any other institution handed down by their Saxon forefathers. When Epping Forest was in danger from attempted enclosure, this real statesman persistently and eloquently defended year after year the rights of the people against the encroachments of the Lords of the Manor. Again and again did he remind the House of the rare value of the forest to the teeming population of the East End of London; and on one remarkable occasion he saved this magnificent piece of public property in spite of the opposition of the Liberal Government, actually defeating them by a majority of 100. He succeeded in getting incorporated in the General Enclosures Act a clause providing that in all future enclosures of waste land certain portions should be set apart for labourers. He struggled gallantly, but, alas! in vain, to get introduced into Mr. Cross's Commons Bill a clause which would prevent enclosures within six miles of London, and within certain fixed distances of other towns, according to their population. Lastly, Mr. Cowper-Temple's Thames Embankment Bill has produced for Londoners and provincial visitors to London what Lord Harrowby truly designated "the noblest Boulevard in the world." In advocating this important matter of open spaces Lord Mount Temple was far ahead of his contemporaries, just as he was in advocating the repeal of the Corn Laws, the abolition of University tests, church-rates, and Jewish disabilities.

S. L.

ON THE FALLACY OF ADJUSTING PROPORTION TO SIZE.

SIR,—A few years since a fallacy of a similar order to that upheld by "Toreuticos" possessed the *dilettanti*. Peculiar defects in pictures were then attributed to the astigmatism of the painter's eye, and differences in the rendering of the same originals to artists seeing differently. But the shortsighted theorists forgot that the pictorial representations, not being like the originals copied, could never have re-impressed the retina of the artist as correct copies. So this long-existing fallacy was at last, by rational acumen, finally disposed of.

There is a very simple and natural method of disposing of the more recent fallacy. Remove any of the famous works from the proper or best point of view to different distances, and determine whether any disproportion is apparent as the image on the retina is reduced by the removal of the statue to a distance. There is no collective opinion, that I am aware of, in support of "Toreuticos's" motion. The fallacy originates, I am inclined to think, in the utterly unwarrantable assumption that everything the Greeks did in art was right. They did a great deal that was disproportionate and wrong in the commencement of their art career, and only less than other nations when they were at their best.

METER.

PARTY-WALLS.

SIR,—I notice a letter under the above heading in your number of June 26th, which seems to be of interest to builders, in which an explanation of certain facts is asked for. But as regards the first instance, in which "E. G." has paid 100*l.* to be clear of the claim against him, one must presume that he would not quietly pay the sum unless he had received legal advice upon the question he puts to your readers, so he can hardly expect them to give amateur opinion, and possibly make themselves look foolish. But it strikes me that "E. G.'s" difficulty in both cases falls under the head of the right of buildings to support rather than under that of party-walls, as no question apparently of what one may term a "party-wall" character arose, but rather a question as to proper working and the right to support. As to Sir W. Tite's plan, these stories often lose some of their original features by telling, but I fancy a lawyer would say that if a neighbouring building had a right to support, no notice that building operations likely to endanger it were about to take place would do away with the right. But, then, was there such a right? I fear we have not been told the cardinal facts of the case.

A CONSTANT READER.

THE LAW OF DISTRESS AND THE LAND QUESTION.

SIR,—In a letter on "The Land Question," which you did me the favour to publish on April 3rd, I mentioned incidentally, as one of the farmers' grievances, the operation of the law of distress, as making the landlord a preferential creditor over others, to their and the farmers' detriment. Exception was taken to my statement in a letter you published on April 17th, in which the writer says my view of the question "shows want of knowledge," and goes on to state that many landlords have made use of this law to shield their tenants from creditors during the recent bad times,—which latter may be true, although, from a creditor's point of view, undesirable and unjust.

That my statement, thus called in question, was not inaccurate, we have proof in a report of a deputation to the Premier from the "Farmers' Alliance," on the 16th inst., a body having, according to Mr. James Howard, M.P., the chairman, no less than fifty members in the present Parliament. One of the spokesmen on this occasion, Mr. Edward England, called the

attention of the Premier to the existing law of distress, which he said "he regarded as the hinge and pivot of all the disadvantages that regarded the tenant. That law of distress was largely taken advantage of by landlords, because under it they were perfectly safe in accepting the most reckless bid that could be offered to them. It was an unfair advantage, which in the long run did not secure them any benefit. He spoke the feeling of that deputation, and he believed that of the large majority of the farmers of Norfolk, when he said that nothing short of the total abolition of that law would be satisfactory to them."

To this the Premier replied,—"I quite agree that the law of distress is a law of severity which cannot be justified, and the course which has been taken in Scotland may lead the English farmer to say that he has not been treated on the same principle."

As this is a purely social question, and one of great interest to all of us, it cannot be desirable that this relic of a feudal system, no longer suited to our civilisation, as many of us think, should remain at least misunderstood, and the *Builder* may, therefore, be doing us a great service in permitting such a question to be ventilated in its pages. E. GRIMES.

THE PROPOSED NEW MUNICIPAL BUILDINGS FOR GLASGOW.

THE Glasgow Town Council have resolved to ask Mr. Charles Barry, late President of the Institute of British Architects, to adjudicate on the plans which have been sent in by architects from various parts of the country for the municipal buildings for Glasgow. It is stated that no fewer than ninety-eight boxes and parcels have been sent in to the Glasgow town-clerk in connexion with the competitive designs for the buildings. The designs have been numbered consecutively from 1 to 98, and insured by a floating policy to the extent of 5,000*l*. A number of architects sent in copies of reports on their plans for distribution among members of the Town Council, but the committee have declined to distribute them, leaving the matter entirely in the hands of the adjudicator.

BLUNDELL'S SCHOOL, TIVERTON

THE memorial-stone of the new buildings was laid on the 26th ult. by the Earl of Devon. The site consists of about 20 acres, and the new buildings will accommodate 250 boys. The cost of the whole is estimated at about 15,000*l*. The buildings have been designed by Messrs. Hayward, of Exeter, and the contractors for the work are Messrs. Langdon & Poole, Minehead. In style the new school will correspond with the old one, but the interior will be considerably different. The buildings will be arranged so as to carry out the present system of teaching by the use of class-rooms in combination with a large school, or assembly-hall, and the whole of these rooms, with the exception of the laboratory and adjacent lecture-room, will be on the upper floor. The large room will be 66 ft. by 30 ft., and have an open-timbered roof; and the class-rooms, six in number, will vary from 31 ft. to 24 ft. in length, and be generally 20 ft. wide and 14 ft. in height. The entrance will be through the tower, which is at the north-west angle of the building, and over the doorway will be a niche for a statue of the founder. A second external doorway in the tower is intended to form an approach to a chapel, which, it is hoped, will be soon erected. Beyond the tower the principal staircase will lead up to the rooms above, and the remainder of the north front will contain the laboratory, a room for apparatus, and a lecture-room underneath the great school-room. Under the class-rooms will be a cloak-room, a room for the day boys, one for the assistant-masters, a school library, and a large dining-hall intended for boarders in the head-master's house, as well as for such day boys as, living a distance from the school, may be glad to avail themselves of the master's table. The accommodation for the head-master will be convenient, and have kitchen offices sufficiently large for taking boarders, but no further provision is made for them in the present contract. The north front of the building will be 108 ft. in length, and the extreme length from north to south, including the head-master's house, will be about 224 ft. The whole of the building will be erected with Halberton stone, with dressings of Doulting stone.

ARCHITECTURE, UNIVERSITY COLLEGE, LONDON.

THE following are the prize-gainers in the department:—

ARCHITECTURE, Mr. T. Roger Smith, F.R.I.B.A.—*Construction, second series*, Donaldson Silver Medal, A. S. Vowell, of London; Certificate, 2, C. H. Bedells,* of Crouch End; Third Class, F. W. St. Aubyn, of London. *First series*, Prize, C. J. Tait, of London; Certificate, 2, F. S. Ogilvie,* of North Shields. Third class, S. J. Bury, of Whetstone. *Fine Art, second series*, Donaldson Silver Medal, A. B. Pite, of London. Second Class, Wm. A. Pite, of London; Third Class, F. A. Gerrish, of London. First Series, Prize, W. J. Lander, of London; Third Class, B. V. Westbrook, of London, C. Turner, of London. *Modern Practice*, Prize. Fr. E. Eales, of London. Certificates, 2, R. E. Smith,* of Forest Hill. 3. A. G. Morten, of London. 4. (equal) S. J. Bury, of London, F. G. F. Hooper, of London. *Ladies' Class, Prize*, Laura E. Jones, of London. Certificate, 2, Edith M. Smith, of Forest Hill; Second Class, Elizabeth Beck, of London; Third Class, Hannah Oliver, of Kew.

The Council of the College have again appointed Mr. Roger Smith to conduct these classes for the session 1880-81, in the absence of Professor Hayter Lewis.

"THE SITE OF THE '51 EXHIBITION."

SIR,—In last week's number of the *Builder* you remark, in reply to the letter from Mr. Worssam, "The site of the '51 Exhibition should certainly be marked." Permit me to state that when talking over business matters with the late Sir Joseph Paxton in 1852, while making the plans for the present Crystal Palace at Sydenham, I distinctly remember his telling me, "I have planted the site of the old Exhibition with *a special kind of grass*, so as to indicate the spot in years to come."

That was his idea of a memorial. Why cannot this simple plan still be carried out?

PHILIP B. LEE, Architect.

"SMALL POWER ENGINES."

SIR,—May I be permitted to answer the very suggestive inquiry, under the above heading, contained in your issue of the 19th ult.?

Mr. Sewell wishes to know of a firm that will supply small power engines to do the following work in a country house, viz.:—

1. Pump water.
2. Do minor farm work.
3. Warm the building.
4. When not engaged on Nos. 1 and 2 to produce power for two electric lights.

The first three conditions are not by any means new to my firm, as several of the hot-air engines we manufacture, and which have been described in your pages, are doing this class of work. The stove of the hot-air engine warms a room; and, if need be, the waste heat of the furnace can be utilised for warming by the hot-air system, or it may be used to supply heat to the hot-water boiler of an ordinary greenhouse.

From ½-h.p. to 5-h.p. the hot-air engine will do this class of work with very little consumption of fuel, and with much less attention and skill than is required to drive a steam engine.

No. 4 is the only condition requiring more than ordinary consideration, not because of the mechanical difficulties so much as the extraordinary perverseness of electric engineers when describing a fact.

The Transatlantic fabrications about electric light have made ordinary engineers and mechanical men in this country despair of ever receiving the truth. Gravitation having placed these audacities in the gutter, it is refreshing to know that Dr. Siemens, Dr. Hopkinson, and other authorities, have been able to tell us what power is required to produce the electric light.

According to Dr. Siemens, an electric light of 6,000 candles requires an engine of 4-horse power, and to illuminate three quarters of an acre, nine of such lights would be required, absorbing the energy of a 36-horse power engine.

I have watched the progress of the electric light with some interest, and although I shall be glad to see a demand for hot-air engines for driving the magneto-electric machines, I think that, until further improvements are made in the production of the light, small motors will be of little use.

Where water is abundant our water-motors will produce power for the electric light. One we have just delivered to Mr. Hussey-Vivian, M.P., for his silver-mines in Norway, will be driven by a head of water 400 ft. high, producing 25-horse power. When this is not winding it might produce the electric light with ease.

If your correspondent wishes us to test any electric-light apparatus, in order to see what power is required to produce one or two lights in order to obtain information on which to base an estimate for hot-air engines, I will, with pleasure, conduct such an experiment free of charge.

W. H. BAILEY.

*** Among various manufacturers who write, Mr. F. W. Jackson, Kingsbury Iron-works, Ballspond, says, "I make a speciality similar to what is required by your correspondent."

* Obtained number of marks qualifying for a prize.

CHURCH-BUILDING NEWS.

Soham.—Soham parish church has lately been re-opened by the Bishop of Ely, after restoration under the direction of Mr. J. P. St. Aubyn, architect, according to whom the church was originally a "cross church," with a central tower, built about the end of the twelfth century. The nave is 52 ft. by 22 ft., with side aisles of the same length and 9 ft. wide, divided from the nave by arcades of four arches, springing alternately from octagonal and circular shafts, with moulded caps and bases, and plain pointed arches of two orders. The central tower, 22 ft. square, springs from four pointed and enriched arches of three orders, rising from semicircular responds with enriched capitals and plain bases. The works now completed comprise the complete repair of all the windows, doors, and other stonework, both external and internal. New roofs have been put to the north and south transepts, as well as to the two chapels, and a new floor to the tower. The work has also included the re-plastering of the walls, the removal of the galleries which surrounded and encumbered the church on all sides, the re-arrangement of the seating, the opening of the tower to the church, the removal of the font, the repairing and re-tiling of the floor, the re-glazing of all the windows, and the warming of the church. Some portions of the work have been carried out by Mr. Tooley, of Bury St. Edmund's, and they were completed by Messrs. Tebbitt, of Soham, at a total cost of about 3,000*l*. Mr. Tebbitt, sen., died during the progress of the work, which was then taken up by his son. The accommodation is for 562 persons.

Wilden.—A new church at Wilden has lately been consecrated by the Bishop of Worcester. The church has been erected at the sole cost of Mr. Alfred Baldwin, J.P., on ground the gift of the Ecclesiastical Commissioners. It consists of a nave, chancel, vestry, organ-chamber, and bell-cote, and will accommodate 150 adults. The style is Early Decorated. The materials used are the best facing bricks, with stone dressings, and tiles for the roof. The roof, internally, is open-timbered. The architect is Mr. W. J. Hopkins, diocesan architect, Worcester; and the contractor was Mr. J. Cook, of Hartlebury. The original contract for the church was 1,400*l*., exclusive of boundary-walls, heating-apparatus, lighting, the Communion service, and the church furniture, which, with the cost of the organ, must make the total expenditure amount to between 2,000*l*. and 3,000*l*.

Oldham.—The new church of St. Paul's, Ashton-road, Oldham, has been consecrated by the Bishop of Manchester. Messrs. Wild & Collins, of Oldham, are the architects. The church is in the thirteenth-century style of English architecture, and on plan consists of nave, aisles, chancel, organ-chamber, clergy and choir vestries, with a contemplated tower and spire at the west end of the south aisle, for which the foundations have been put in. The walls are built of Yorkshire parpoints, with Warwick stone dressings, backed up with Highmoor rubble. The roofs throughout are open timbered, and varnished. The benches are of pitch-pine, varnished, and provide accommodation for 550 worshippers, exclusive of twenty-four seats in the chancel for the choir. The floors of the aisles are flagged with Rochdale flags, and the chancel floor is laid with ornamental tiles. The reredos, which has been presented by Mr. John Taylor, of Fernholm, is of Caen stone, with carvings emblematic of the four Evangelists in the head of the side panels, the centre panel having the head of Christ, with a crown of thorns. The pulpit is also of Caen stone. The church is warmed on the low-pressure hot-water system, with Wagstaff's saddle boiler. The contractors have been:—For foundations, Mr. Joseph Stevens; for masons' work, Messrs. J. & J. Whitehead, of Marsden; joiners' work, Messrs. Chas. Schofield & Co.; plumbing and glazing, Mr. John Bardsley; slating, Mr. Daniel Lees; plastering, Mr. James Hall; heating apparatus, Mr. Giles Shaw; gasfittings and communion-rail, Messrs. Gentle & Falconer; reredos, Messrs. Joseph Bonehill & Co., of Manchester; pulpit and font, Mr. James Hilton, of Manchester; chancel tiling, the Campbell Brick and Tile Company, Stoke-on-Trent. The Communion-table has been made and presented by Mr. Samuel Mellor.

Llanbadern.—Llanbadern Church, Aberystwith, was reopened on the 1st of July by the Bishop of St. David's, after restoration and refur-

nishing of the tower and transepts, at a cost of about 2,500*l.*, under the direction of Mr. John P. Seddon, architect. The transepts have been re-roofed, and the crux groined in wood under the belfry-stage. The freestone pulpit, which has two figures in bas-relief, of St. John and St. Paul, by Mr. Stannus, is a memorial-gift of the Bishop's. Messrs. Roderick Williams & Son have executed the work of the restoration. The nave was restored some years since by the same architect, and the chancel will shortly be taken in hand.

DISSENTING CHURCH BUILDING NEWS.

Somercotes.—Four memorial stones of a new Wesleyan School-chapel have been laid at Somercotes, Derbyshire. The building will cost 720*l.*, including the cost of the land. The chapel will accommodate 200 persons. The contractor is Mr. Page, of South Normanton, and the architect, Mr. Eyre, of Codnor.

London.—The City-road Wesleyan Chapel, which was partially destroyed by fire in December last, has been reopened, after restoration, in which all the old and familiar features have been reproduced. The fine plaster-enriched ceiling, which was 100 years old, has been reproduced from castings of the fragments of the ornament not quite burnt, and decorated and gilded. The lighting is by two sun-burners, replacing the former plan of a ring of burners round the gallery. The ventilation is on the tube-system, Weaver's extractors being used in the roof. All the monuments have been restored precisely as before, including one of the granite monoliths supporting the apse-arch which was erected as a monument to the memory of the late Dr. Waddy. The morning or small side-chapel has a new roof of panelled pitch-pine, with ceiling-light, with an outer one glazed with Rendle's glazing. The warming is to be effected by Grundy's system. The architect is Mr. Charles Bell, and the builder is Mr. J. D. Hobson, of the Adelphi, who has carried out the work in the short space of eighteen weeks, the amount of the contract being about 5,000*l.* The gas-lighting is by Messrs. Strode & Co.; the ventilating by the Sanitary Engineering Co.; and the ornamental work by Mr. Mullen.

Pendleton.—A new Welsh Presbyterian chapel, with schools and house adjoining, have lately been completed. They were designed and carried out under the superintendence of Mr. Wm. Dawes, architect, Manchester. They are situated in Broad-street, Pendleton, and in style they are based on the Romanesque. The walls throughout are of red brick, relieved with stone dressings, and on the principal front some good carving and ornamental stonework add to the effective appearance of the buildings. The chapel, which accommodates 305 persons on the ground-floor and 258 in the galleries, is 57 ft. long, 30 ft. 7 in. wide, and 32 ft. high. The floor rises as it recedes from the pulpit, so that all those who have sittings at the back have an unobstructed view of the minister. The inner and outer porches or lobbies are arranged to prevent draughts interfering with the comfort of the congregation sitting near the inner entrance. The air of the lobby will be warmed by hot-water piping, the same as that in the chapel itself, so that any rush of cold air from the outer porch would be intercepted and warmed before it passes into the interior of the building. The staircases to the galleries flank the principal front, and are entered from the outer porch. They are designed externally to break up the otherwise broad and flat gable end of the chapel, and they give, in connexion with the turret that surmounts the gable and the recessed portion over the front entrance, a varied outline. The whole of the windows in the principal front of the chapel are filled with stained glass. The ventilation has been carefully considered, and alternative systems of natural and artificial extraction have been provided for by ornamental outlets in the ceiling underneath the galleries, and by piercings in the ornamental string of the ceiling of the chapel, connected in each case with the foul-air trunks that convey the vitiated air to the extraction-shaft; the impure air will be drawn upwards and will thence escape. Whenever found necessary, to meet the varying conditions of certain seasons of the year, extraction-boilers will be used to rarefy the air in the extraction-shafts and accelerate the upward current; but for the present it has not been considered necessary to make this extra provision. The escape-outlets in the ceiling of the chapel are confined to three bays furthest from the pulpit, with the view of making the current of air passing from that part help to convey the voice of the minister to the most distant parts of the building. In connexion with the chapel there is a minister's vestry and conveniences for the use of the congregation, and between the chapel and the schools there are three rooms that may be alternately used as vestries or class-rooms. Over these rooms are arranged the organ-chamber and two additional class-rooms. The school-room is 48 ft. long, 36 ft. wide, and 22 ft. high. In the basement there are store-rooms, tea-room, heating-chamber, &c. A lift is carried from the tea-room to the school-room for the convenient supply of the various articles required at large tea-meetings. The chapel-keeper's house is at the back of the main buildings, and is quite detached. The contractors for the work were Messrs. Enley, Jones, & Robertson. Mr. Joseph Roberts was the clerk of the works. The cost of the buildings was about 5,500*l.*

Bude.—A new Wesleyan Chapel has been opened at Bude, Cornwall. It has been built by Mr. Beckley, of Holsworthy, from designs of Mr. J. Hine, architect, Plymouth, at an estimated cost of about 1,800*l.* It is Byzantine in character, and Plymouth limestone and Bath freestone are used externally. The chapel consists of a nave with a transeptal end, divided from the main building by an arcade of three segmental arches extending across the building. The object of this is to allow of the lower end, with the transepts, being shut off from the nave during service in winter, and also to facilitate its use as a school. The larger congregations of the summer months will thus be provided for, and the chapel will not be inconveniently roomy in winter. The interior is highly finished, and has a pitch-pine dado carried to the height of the pews, which also are of varnished pitched pine. The windows, of which there are fifteen, are round-headed, and have been glazed with cathedral glass, in two tints, by Fouracre & Son, of Stonehouse. The ceiling, which is flat, is divided into square panels by moulded beams, sustaining the pendants of coloured metal which uphold the coronas for the lighting of the chapel. The exterior of the chapel is relieved by bold entrance-porches, and the frontage by the window columns and mouldings, and a little carving, done by Mr. Harry Hems, of Exeter.

Books.

The Industrial Arts of India. By GEORGE C. M. BIRDWOOD, C.S.I., M.D. Edin. With Map and Woodcuts. Chapman & Hall.

THIS, which is one of the series of Art Handbooks issued under the authority of the Committee of Council on Education, has been prepared to form a guide to the public in visiting the India Museum, now transferred to the authorities of the South Kensington Museum. The second part of the book is, in great measure, a reprint of the author's Handbook to the Indian Court at the Paris Exhibition of 1878. This was so well received that Dr. Birdwood had resolved to republish it, with additions, when he was asked to write a popular handbook in connexion with the re-opening of the India Museum under its new administration. The material already collected formed part of this,—not, as the author explains, that the book thus formed is directly an analysis of the contents of the India Museum: it must rather be regarded as an index of its deficiencies; the treatise giving a general outline of Indian art manufactures which are partially, but only partially, illustrated by the contents of the Museum. To this is prefixed a sketch of the Hindu Pantheon, the enormous ramifications of which cannot be even briefly set down under a considerable number of pages, and some knowledge of which is necessary to understanding half the interest of the manual arts of India. So Dr. Birdwood affirms, and it is not for us to contradict him; though we may be allowed to say that the great interest of Indian art lies really in that portion of it which is purely decorative, and into which no story and no representation of their multifarious deities enters, the interest in regard to the latter being, after all, rather archæological than artistic. Nevertheless, the information given upon this subject is no doubt of much interest in itself, and the small drawings which accompany it will enable those who are desirous of following up the Hindu mythology in its artistic illustration to identify the various deities. But the sketches given of them, many of which represent figures we are all more or less familiar with, recal Ruskin's effective comparison between the *morals* of the Highlander and the Hindu, as connected with the love of nature in the one, and the worship of monstrous, cruel, and mis-shapen deities in the other. And, in fact, Dr. Birdwood, by implication, confirms Ruskin's view, when he remarks on the bad effect which much of this grotesque mythology has had upon Hindu art, in leading the artists of the Peninsula to the constant representation of monstrous and mis-shapen forms. He points out, and one or two of his illustrations, show that the Hindu has not been without the faculty of carving graceful human figures when his mythology presented him now and then with a god who was in the image of man; but people who are continually led to produce figures which are essentially symbolic rather than human in character, and in which the symbolism is carried out by the production of figures with a plurality of heads, arms, or legs, and in other ways entirely and purposely departing from the human type while just recalling it sufficiently to give point to the grotesque character of its treatment, are almost inevitably bound to lose the power of excellence in the representation of human expression; and the natural result is that Indian art, with all the truly exquisite elaboration and fancy which it displays in dealing with purely ornamental work, has produced an enormous number of the most hideous figures that ever were invented by man.

The Hindu artist is not much better at animals, though he does not intentionally caricature them. But perhaps the influences which led him away from the realistic study of the human figure have also operated to make him blind to the anatomical points of animal framework. In this respect the Hindu artists stand in curious contrast to the Japanese, who are also a people incapable of correctly representing the human figure and at the same time are beautiful artists in decorative work; but with this the Japanese combine a rare power of representing animal life with spirit and fidelity, which the Hindus seem entirely to want. Their animals are grotesque in proportion and action, for the most part, and are often almost boneless in appearance and destitute of proper articulation of the joints; and perspective, when it comes to drawing on the flat, is quite a mystery to them.

It is needless to say that when we come from figure-subjects, human or animal, to pure ornament, Indian art is for the most part superb, not only in design, but in the beautifully fit way of treating the material, and in the manner in which floral types are made use of as the basis of artificial ornament. Among the instances of the true taste in regard to material shown in Indian work, Dr. Birdwood especially mentions their treatment of the precious metals, the manner in which the least possible bulk of a costly material is turned to the greatest possible account in artistic value, and the contrast presented by such work to so much of English gold and silver work, where weight and mass of material seem to be regarded as an object in itself for which the purchaser is willing to pay even more highly than design. We have before commented on this vulgarity of taste in English work of this kind, and are glad to find Dr. Birdwood speaking so strongly on the point. He adds that English dealers in *bijouterie* will weigh such specimens of Indian gold and silver work in their hands, and look on them with contempt for their lightness, which, when combined with such beautifully artistic use of the material, is, of course, one of their excellencies, and renders them a far better investment of money, even, than "the unseemly dead-weight gold and silver manufactures of London and Birmingham, for which customers have to pay four times more than the value of their weight," and in which, as the author truly observes, the object seems to be to "bestow the least amount of work on the greatest amount of metal."

The book is adorned with a sufficient number of excellent illustrations of Indian decorative art, to render it in itself a considerable help to appreciating the beauty of Indian art, even apart from the Museum, and a good account is given of each branch of work. It is noticed that there is one form of art, lace, that has only recently been introduced into India, but for which (as one would have expected) the native artists show great aptitude, and in which they have already produced beautiful work. At present India is still a country where all orna-

mental work is hand-made, and therefore has almost inevitably an artistic style and feeling; though it is to be feared that machinery will set its hoof there before long. The art is, however, more traditional than people are aware of who do not see much of it; the same forms are continually repeated, but they are all beautiful forms, so far as the purely decorative work is concerned; but the author remarks that the influence of European education and "the irresistible energy of the mechanical productiveness of Birmingham and Manchester" are already going far to vitiate the beauty of the traditional art of India, and to confuse its forms. Another remark of Dr. Birdwood's we may quote *verbatim*:—"The worst mischief is perhaps done by the architecture foisted on the country by the Government of India, which, being the architecture of the State, is naturally thought to be worthy of all imitation. The Nawab of Bahawalpur was the other day installed on the throne of his ancestors, and in anticipation of the auspicious event, the Indian Government built him a palace, which is the ghastliest piece of bare Classicism it is possible to imagine, even with so many examples before us in this country of the Dissenting-chapels and vestry-halls of the last century. And now Holkar, in obvious emulation of this preposterous production, is building for himself a vast Italian palace at Indore, which is to cost many lakhs of rupees, and will be like Trentham, or Buckingham Palace, or anything else in the world but a habitation meant for kings. This sort of thing has been going on all over India ever since the establishment of the British peace in 1803-6, and 1818-19, and is the fountain-head of all the evil we deplore." We fear there is no hope of any remedy for this, unless we could educate the British Government in architecture, which seems out of the question.

VARIORUM.

A NEW edition of "Dickens's Dictionary of London" has been published. As some little omissions that we pointed out in the first issue have been supplied in this, we can conscientiously say that it is an improved edition. The Dictionary has been received with great favour by the public.——Mr. Elliot Stock is about to issue "Our Ancient Monuments and the Land Around Them," an antiquarian and historical account of the antiquities which are proposed to be preserved by the Ancient Monuments Bill now before the Houses of Parliament. The work will be illustrated, and will have an Introduction by Sir John Lubbock, bart.——"Ancient Wood and Iron Work in Cambridge" is the title of a work about to be published in parts by Spalding, of Cambridge, containing a series of elevations and sections drawn from examples of carved wood and wrought-iron work dating from the sixteenth century, by W. B. Redfarn, with descriptive letterpress.——With reference to the numerous new synagogues to which we have lately referred, the following as to the ancient synagogue, from Canon Farrar's "Life of Christ," will not be out of place:—"It was simply a rectangular hall, with a pillared portico of Grecian architecture, of which the further extremity (where the 'sanctuary' was placed) usually pointed towards Jerusalem, which, since the time of Solomon, had always been the *kiblah*,—i.e., the consecrated *direction*,—of a Jew's worship, as Mecca is of a Mohammedan's. In wealthier places it was built of white marble, and sculptured on the outside in alto-relievo, with rude ornaments of vine-leaves and grapes, or the budding rod and the pot of manna. On entering there were seats on one side for the men; on the other, behind a lattice, were seated the women, shrouded in their long veils. At one end was the *tebhah*, or ark of painted wood, which contained the sacred Scriptures, and at one side was the *bima*, or elevated seat for the reader or preacher. Clergy, properly speaking, there were none, but in the chief seats were the ten or more *battanim*, "men of leisure," or leading elders; and pre-eminent among these the chief of the synagogue, *rôsh hak-kenêseth*. Inferior in rank to these were the *chazzân*, or clerk, whose duty it was to keep the sacred books; the *shellach*, corresponding to our sacristan or verger, and the *parnasim*, or shepherds, who in some respects acted as deacons."——From the July number of "Picturesque Europe,"—an excellent one,—we take a paragraph as to the fountains of Constantinople:—"At every corner fountains of pure running water supply the element which plays so prominent a part in the religion of Islam, and which is in constant demand for purification after prayer. These fountains vary in size and magnificence; some are mere openings in a wall, others are square-built temples of marble, with dome-like roofs and projecting eaves, richly decorated and inscribed with suitable texts. The words, 'By water everything lives,' may be deciphered on almost all,—here cut into the stone, there written in golden letters upon an azure ground. Some of these fountains enjoy especial prestige, as that of the Sweet Waters of Asia, which stands upon a wide terrace on the Asiatic side above the Bosphorus, shaded by plane-trees, and in full view of the glittering white houses, castles, and towers of Europe, the prison formerly of the Janissaries, who once made and unmade sultans, and governed the capital with despotic, irresponsible rule. To this come not only humble neighbours to fill their water-vessels, but great ladies are ferried across in their private *caïques*—the gondolas of Constantinople—from the harems of Stamboul, and wait, lying enveloped in their *yash-maks*, or veils, while their attendants bring them goblets of water from the fountain which is so much esteemed."

Miscellanea.

Royal Albert Hall.—On Sunday afternoon last there were, at the lowest computation, 5,000 attendants at the organ recital. It was the last of the series which has been given during the months of May and June by Mr. H. H. Statham, as a labour of love. The programme was laid down and printed at the commencement of the series, and consisted entirely of organ music, pure and simple, of high character, and with very little reference to what is called the popular taste. The public have reason to be thankful to the Council of the Albert Hall for this provision, gratuitously, of a high and fitting form of enjoyment. The fine-art exhibition at the hall has been considerably increased and strengthened since its opening, and the collection of ancient and modern wood-carving should be seen by all who are interested in the arts of the country.——On this, Saturday, afternoon, a great opera concert is to be given by Mr. Gye, with the *artistes* of the Royal Italian Opera, including Madame Patti and Madame Albani. The interior of the hall, on the last occasion when Mr. Gye gave a concert here, was a sight not soon to be forgotten. When filled, as it was then, the Albert Hall presents a scene scarcely to be paralleled.

New Board Schools.—Some picturesque schools, built on rising ground, and affording accommodation for 521 scholars, were opened at Killamarsh, near Chesterfield, on the 16th ult. Of an English Domestic type of Gothic, they have been erected at an expense of 4,437*l.* from the designs of Messrs. Innocent & Brown, of Sheffield, architects, whose experience in school-board schools is considerable. The buildings are of Dunford Bridge stone, with dressings from the Ancaster quarries. The roofs are covered with Welsh slates, and there are Berkshire ridge creases. A master's house is attached to the school-buildings. The dwarf boundary wall is surmounted by wrought-iron railings. The rooms have all a pitch-pine dado, up to the level of the window-cills. The floors of the principal compartments are laid with wood cubes. The warming is by hot water. The following tradesmen carried out the works. Mr. J. Lister, of Aston, near Rotherham, general contractor; Mr. Holden, Sheffield, heating apparatus; Mr. Harry Hems, Exeter, carving; and Messrs. Redmayne, May, & Co., Sheffield, desks and fittings. The clerk of works was Mr. W. W. Mabson.

Value of Ground-rents.—On the 24th ult. Messrs. Chesterton & Sons offered for sale, at the Auction Mart, freehold ground-rents, secured upon houses in Beaufort-gardens, Brompton-road, amounting to 221*l.* per annum. They were sold in one lot for 6,600*l.* The houses will come to the freeholder in about eighty years from this time.——The same auctioneers, on the same occasion, offered for sale leasehold ground-rents, secured on dwelling-houses in the St. John's-wood neighbourhood. They were sold in two lots. The first lot, giving a net profit rent of 115*l.* 10*s.* per annum for sixty-one years unexpired, was sold for 1,925*l.* The second, a net rent of 61*l.* per annum, also for sixty-one years unexpired, sold for 1,180*l.*

Industrial Exhibition at the East End.—On Wednesday afternoon the Lord Mayor (Sir F. Wyatt Truscott) proceeded in civic state to the east end of London, for the purpose of opening an industrial and fine-art exhibition at the Bow and Bromley Institute. The Institute, which has been established for ten years, is situated over the North London Railway station in the Bow-road. The exhibition was promoted with a view to encourage inventive skill, excellence of workmanship, and the wise employment of workmen's spare hours, and all the exhibitors belong to the working classes. The articles exhibited are arranged under five heads,—namely, mechanical articles, artistic, general, fabrics and fancy work, and work done by young persons under eighteen. Fifty guineas in prizes are offered, of which the Clothworkers' Company give 21*l.* The Coopers' Company provide a special prize for the best specimens of cooperage or articles connected with that trade. Various firms lend interesting specimens of their particular trades; thus, Messrs. Doulton and Messrs. Wedgwood send articles of pottery; Messrs. Powell, of Whitefriars, some ornamental glass; and Mr. Wilberforce Bryant, of the firm of Messrs. Bryant & May, sends a valuable collection of Japanese bronzes, carvings, and armour. The exhibition will remain open for some time to come from two o'clock until ten at night, Sundays excepted.

Who is to Blame?—At the meeting of the Hackney Guardians on Wednesday, says the *Metropolitan*, the clerk laid before the Board a report from the building committee, stating that they had considered the question referred to them as to the position in which the new infirmary buildings were placed, and they found that the foundations were laid 25 ft. nearer to the existing infirmary than was directed by the Local Government Board, and they recommended that the matter be laid before the Central Board, and to ask their advice on the matter. "The report having been received, the question of responsibility for the error was raised. Some of the members were of opinion that it rested with the architects; others considered the builder culpable, and all agreed that the mistake was a most unfortunate one.—In reply to a question, Mr. Higgins said a reason had been assigned by the architects, but he (the speaker) could not give it in public. On this, Mr. Kemp and Mr. Hart declared their inability to vote unless they were put in possession of those facts. Eventually they were given, and then followed a discussion as to the propriety of the work being allowed to progress until the will of the Local Government Board was known. In the end, it was decided to forward a statement of the affair to the Upper Board, and also to let the architects and the builders know the position of affairs."

Fires.—What proved to be a very extensive fire broke out on Saturday night, soon after nine o'clock, at the saw-mills of Messrs. Roberts, Bartram, & Prout, Belvedere-road, Lambeth. The official report of the damage states that a brick building of two floors, about 120 ft. by 60 ft., the property of Messrs. Roberts & Co., was completely burnt out; a brick building of one floor, about 35 ft. by 20 ft., used as a boiler and engine house, was, with the contents, very seriously damaged by fire, heat, and water; and several surrounding stacks of timber were also greatly damaged by fire, water, and removal. The stacks in an adjoining open yard, belonging to Messrs. Lucas Bros., builders, also suffered damage. The cause of the fire is unknown.——At half-past four o'clock on Sunday morning a serious fire occurred at 17, Duke-street, Bloomsbury, on premises occupied by Messrs. Holland & Hannen, builders. The fire originated in the saw-mills on the ground floor, from an unknown cause, and was not extinguished until the mills and the contents had been seriously damaged by fire and heat, and an adjoining building of three floors, about 50 ft. by 20 ft., used as a store, completely burnt out.

The Late Mr. W. Hepworth Dixon.—The interesting and valuable library of this lamented writer will be sold by auction, by Messrs. Sotheby, Wilkinson, & Hodge, on Tuesday and Wednesday next. Some of our readers may be glad of the information.

Window Gardens.—I see window-gardening is a subject with you. I have had some iron window-gardens,—all in one piece with the sill,—holding two barrowfuls of earth each, perfectly drained and safe, for years. They are fully successful, and their contents are in luxuriance now.—B.

The Destruction of a Railway Bridge.—An inquiry into the causes of the recent accident on the Hereford and Brecon Mid-Railway, by washing away of the buttresses of a bridge over a tributary of the river Wye, was resumed at Brecon, before Mr. D. W. J. Thomas, county coroner. Colonel Rich, inspector to the Board of Trade, was present. The accident happened on the 18th ult. A heavily-laden goods train was to pass over a bridge across a stream known as the Llaingan Brook, but the abutments of the bridge had, owing to exceptionally heavy storms, been washed away, and when the train reached the spot it went over the chasm, and was utterly smashed, and a driver named Parker was killed. The evidence taken now tended to show that the bridge was fairly well and substantially built, and that the exceptional character of the storm fully accounted for the accident. The testimony of Colonel Rich, C.E., inspector of railways for the Board of Trade, who had examined the scene of the catastrophe, was directly to this effect. The jury were unanimously of opinion that the death of George Parker was purely accidental, and that no blame was attributable to the railway officials.

Schools for Girls.—On the 29th ult. the North London Collegiate Schools for Girls were formally opened by his Grace the Archbishop of York, Mrs. Thomson presenting the prizes to the girls in the Great Hall. The Bishop of Rochester, late chairman of the Board, was also present. His Grace was taken by the architect (Mr. E. C. Robins) over the building, which is now entirely in the occupation of the girls. The opening of the Great Hall and new building associated with it, by the Prince and Princess of Wales, took place in July last year. About 500 girls are now accommodated, and about 150 more are awaiting vacancies. A tablet recording the munificence of the Brewers' Company has been placed in the entrance-hall. Thus the largest and one of the most successful day-schools in the metropolis for the higher education of girls is started on its way, with every modern appliance to ensure continued usefulness.

A Merry Old Parson.—One of the oldest clergymen living is the Rev. John Russell, or "Passon Jack," as he is oftener called amongst his North Devon parishioners. The reverend gentleman is fast approaching five score years, and still continues to be as "lively as a cricket." In another column of this paper may be read an account of the new Blundell School, at Tiverton, of which the foundation-stone was laid upon the 26th ult. A couple of days before, the annual celebration, known as the "Old Boys' Day," was observed at Blundell School, when, after service at St. Peter's Church, those present were photographed, and then lunched together with other friends in the Lower School. The health of the "Old Boys" having been proposed, the toast was coupled with the name of the Rev. John Russell, who replied in a long and humorous speech.

Cleopatra's Needle.—A plaster cast of a sphinx, coloured to look like bronze, has been fixed by the Metropolitan Board of Works on the Victoria Embankment, in order to judge of the effect prior to the casting in bronze of the two sphinxes which the Board have decided to place on the pedestals on either side of Cleopatra's Needle. The model now exhibited is an enlarged copy of a small sphinx in stone in the collection of the Duke of Northumberland at Alnwick Castle, which is supposed to be of the same period as the obelisk itself, as it bears on its breast the cartouche of Thothmes III. Certain additions have also been made in the manner above described to the base and pedestal of the obelisk in order to hide the broken angles, and, if approved, these will eventually be executed in bronze. The works have been carried out from the design of Mr. Vulliamy, the Board's architect. The general effect is very good.

The Royal Academy.—The President and Council of the Royal Academy held a reception on Wednesday night at Burlington House. Sir Frederick Leighton received his guests at the entrance to the central hall. All the rooms of the Academy were thrown open to the guests, and the general effect was, as usual, very brilliant.

Roselands, Upper Walmer.—A convent church and choir, for the Sisters of the Visitation, are now being built at Roselands, Upper Walmer. Messrs. Pugin, of Westminster, are the architects. The cost will be about 1,900*l*. The contractors are Messrs. W. & T. Donne, of Upper Walmer, Kent.

Removing the Gravel.—This objectionable practice continues to be pursued at the Royal Hospital, Chelsea, and has been again brought under the notice of that parish. It was stated that the holes thus made were filled up with objectionable rubbish. The parish surveyor, however, denied this, and the vestry resolved therefore, by a small minority, to take no action. Mr. Ash said the nuisance was not so great as it was formerly, but still it was bad enough. Some thousands of loads of gravel had been taken out of the place and sold to builders or anybody else who liked to pay for it; a man in Symons-street had the contract to cart the gravel away, and to fill up with any rubbish he could get. Although, perhaps, it was not strictly the business of the Vestry, it would be interesting to know who had the money for it. We think so, too.

Caterham, Surrey.—The foundation-stone of the new Roman Catholic Church at Caterham, Surrey, was laid on the 24th ult. by Dr. Danell, the Roman Catholic Bishop of the diocese, in presence of a large gathering of his clergy and of the guests of the priest in charge of the mission, the Rev. Francis J. Roe. The buildings comprise a church, schools, and presbytery, and are in active progress, the contractor being Mr. Wm. Carruthers, of Reigate, and the architect Mr. E. Ingress Bell.

Church of the Oratory, Brompton.—The first stone was laid a day or so ago. Some correspondents, who were present, complain of great mismanagement on the occasion, and one writes, "It was a perfect muddle."

TENDERS

For the erection of a block of private offices, at the corner of St. Peter-street, Maidstone. Mr. Edward W. Stephens, architect:—

Callund & Son, Rochester	£3,498 0 0
Reeves, Staplehurst	3,497 0 0
Simmonds, Maidstone	3,397 0 0
Clements & Wallis, Maidstone	3,396 0 0
Vaughan Bros., Maidstone	3,388 0 0
Cox Bros., Maidstone	3,313 0 0
Avard, Maidstone	3,237 0 0
Naylar, Rochester	3,147 0 0

For the erection of six cottages at Silvertown, for Messrs. John Knight & Sons. Messrs. Tunley & Boyle, architects:—

Cowland Bros.	£3,291 0 0
Outhwaite & Son	3,196 0 0
Morter	3,195 0 0
Perry & Co.	3,083 0 0
Sheffield & Prebble	2,973 0 0
Cullum	2,896 0 0
Sabey & Son (accepted)	2,888 0 0

For paving at Knightsbridge, for the Metropolitan Board of Works:—

Neal	£1,975 0 0
Cooper & Co.	1,890 0 0
Turner	1,850 0 0
Nowell & Robson	1,589 0 0
Beevors	1,549 0 0
Mowlem & Co. (accepted)	1,487 0 0
Rutty	1,399 0 0

For re-seating St. Paul's Church, Winchmore-hill. Mr. Alfred R. Pite, architect:—

Webber	£520 0 0
Smith	497 0 0
Evans	490 0 0
Staines & Son	478 0 0
Wheeler	455 0 0
Jacklin	440 0 0

For alterations, &c., at Rutland Lodge, Brixton. Messrs. Davis & Emanuel, architects:—

Maxwell, Bros., Brixton-road	£1,027 11 9
Crabb & Son, Upper Tulse-hill	997 0 0
Pack Bros., Brixton-road (accepted)	905 0 0
For Sanitary Works.	
C. & F. Mansfield, Gray's-inn-road (accepted)	£210 0 0

For rebuilding Camberwell Provident Dispensary, and works to residence belonging, Camberwell-green, for the committee of the Dispensary. Mr. William Dunk, architect. Quantities supplied:—

Hall, Beddall, & Co.	£2,312 0 0
Higgs & Hill	2,206 0 0
Downs	2,062 0 0
Ashby Bros.	1,848 0 0
King & Son	1,844 0 0
Rider & Son (accepted)	1,788 0 0

For Wesleyan Methodist Chapel and School, East Grinstead, Sussex. Mr. S. W. Haughton, architect:—

	Chapel.	School, &c.	Saving by use of Red Brick.
Beale, Battersea	£2,095 0	£340	£17
Morris, Ashurst Wood	1,500 0	352	60
Godley, East Grinstead	1,400 0	390	30
Etheridge, Horsham	1,095 0	combined	—
Steer, East Grinstead	1,285 0	345	30
Brown, Southborough	1,517 10	combined	20
Goad, Tonbridge	1,400 0	combined	add 30
Charlwood,* E. Grinstead	1,047 0	330	20
Waters, Forest Row	973 0	175	50

* Accepted.

For extension of premises, Goswell-road, for Messrs. Carter, Paterson, & Co. Mr. Wm. Eve, architect:—

Hubble & Trott	£1,529 0 0
Abraham	1,467 0 0
Wilson & Exton	1,356 0 0
Harris & Wardrop	1,287 0 0
Sheffield & Prebble, Rifle-street (accepted)	1,237 0 0
For Fireproof Floor.	
Homan & Rodgers (accepted)	£178 0 0

For repairs to houses, Royal Crescent and Darnley-road, Notting-hill. Mr. Wm. Eve, architect:—

Eary	£993 0 0
Heiser	924 0 0
Wilson & Exton	910 0 0
Aldred	600 0 0
Larter (accepted)	573 0 0

For erection of a house on the Hog's Back, Guildford, for Mr. George Drewitt. Mr. Chas. H. Sparkes, architect. Quantities by Mr. H. Moon:—

Stephenson	£3,423 0 0
Horn	3,388 0 0
Marten	3,394 0 0
Mitchell Bros.	3,000 0 0
Harris	2,903 0 0
Pink	2,900 0 0
Beale	2,892 0 0
Crooke	2,479 0 0

For alterations and additions to No. 10, Upper Charlton-street, Fitzroy-square, for Mr. James Houghton. Messrs. New & Son, architects. Quantities by the architects:—

Berridge & Traise	£1,699 0 0
Hook & Oldrey	1,654 0 0
Grimwood & Son	1,630 0 0
Gritten	1,630 0 0
Mark	1,600 0 0
Harris & Son	1,469 0 0
Ashford & Stevenson	1,397 0 0

For alterations to bar and fittings of the "Rock of Gibraltar," Evelyn-street, Deptford, for Mr. H. Burney. Mr. Henry Roberts, architect:—

McPherson	£785 0 0
Lewis	515 0 0
Banks, Deptford (accepted)	495 0 0

For residence on the Start's-hill Estate, Orpington, for Mr. J. L. Lovibond. Mr. G. St. Pierre Harris, architect:—

Grover	£1,395 0 0
Haisman	1,368 0 0
Taylor & Son (accepted)	1,350 0 0

For re-building the "Wheatsheaf," Kemsing, for Messrs. Fox & Sons. Mr. G. St. Pierre Harris, architect:—

Warren	£982 0 0
King	653 0 0
Wood	647 0 0
Wiltshire (withdrawn)	626 0 0

For erecting three houses and shops, in Rochester-row, Westminster. Mr. Henry Brace, architect:—

King & Son	£2,826 0 0
Keen	2,459 0 0
Hoare & Son	2,185 0 0
Watson & Dennett, Dulwich (accepted)	1,985 0 0

For the erection of Board Schools in three departments, for 637 children, at Etruria, for the Hanley School Board, Staffordshire. Mr. W. A. Keates, architect:—

Gallimore, Newcastle (accepted)	£3,945 0 0

For the erection of two semi-detached residences, in Jasper-street, Hanley, for Messrs. Malkin & Stokes. Mr. W. A. Keates, architect:—

Lawton & Macham, Silverdale (accepted)	£830 0 0

For Congregational Church, New Maldon, Surrey. Mr. W. D. Church, architect:—

Dove Bros. (accepted)	£3,400 0 0

For altering out-building into coach-house, and building new stable, at Ashstead, for Capt. W. Pitt-Henry. Mr. T. A. Smith, architect:—

Gummow (accepted)	£230 0 0

For engineers' work for new wing, Royal Hospital for Incurables, West-hill, Putney. Messrs. Searle, Son, & Hayes, architects:—

Steam Boilers and Hot-Water Supply.	
Waller & Co.	£742 0 0
Eastons & Anderson	696 0 0
May	670 0 0
Fraser (accepted)	540 0 0
Cooking Apparatus.	
Waller	£610 0 0
Fraser	545 0 0
May (accepted)	415 0 0
Electric Bells.	
Markham	£105 19 0
Sax	55 7 0
Lewis & Sons	37 15 0
Koerber (accepted)	37 10 0

For additions to Belfort House, Upper Norwood, for Mr. S. Symons. Mr. Edward Maynard, architect:—

Hockaday	£1,160 0 0
Bowyer & Sons	798 0 0
Jenkin	674 10 0

For club-room and bar, Epsom-common. Mr. J. Hatchard Smith, architect:—

Pyke (accepted)	£690 0 0

For pair of cottages, Epsom. Mr. J. Hatchard Smith, architect:—

Pyke (accepted)	£500 0 0

For training stables and residence, Epsom. Mr. J. Hatchard Smith, architect:—

Pyke	£1,800 0 0
Jeal (accepted)	1,600 0 0

For house and offices, Epsom. Mr. J. Hatchard Smith, architect:—

Pyke	£1,125 0 0
Jeal (accepted)	1,100 0 0

For repairing and painting the Clerkenwell Parochial Schools. Mr. W. P. Griffith, architect. Quantities not supplied:—

Thompson	£350 0 0 !
Stone	339 0 0
Brown	285 0 0
Haines	215 10 0
Groome	209 0 0
Minton	204 10 0
Cornwell	185 0 0
Burton (accepted)	180 0 0
Bishop & Hooper	175 0 0
Thomas	155 0 0
Parrish	150 0 0
Smythe	117 0 0 !

For the erection of a farm-house at Pwllglas, in the parish of Trefeglwys, Montgomeryshire, for the trustees of the late General J. B. Woosnam. Quantities supplied. Mr. Evan Powell, architect:—

		Extra for 14-in. walls to the first floor.
George, Abbey Foregate, Shrewsbury	£399 11 0	£41 10 0
Hughes & Son, Marton Chirbury	792 14 1	44 0 0
Breese, Llanidloes	767 0 3	29 12 0
Farmer, Wyle Cop, Shrewsbury	749 0 0	46 0 0
Edwd. Williams, Newtown	745 17 11	55 0 0
E. H. Williams, Llanbrynmair	730 0 0	20 0 0
Jarman, Llanidloes	728 10 0	—
Price & Sons, Leigh Minsterly, Salop	700 0 0	—
Evans, Caersws	673 3 9	30 0 0
Woolley, Llandinam*	630 13 8	45 0 0

* Accepted.

For additions to farm buildings, Pant Farm, in the parish of Trefeglwys, Montgomeryshire, for the trustees of the late General J. B. Woosnam. Quantities supplied. Mr. Evan Powell, architect:—

Jarman, Llanidloes	£605 5 0
George, Abbey Foregate, Shrewsbury.	507 7 0
E. Williams, Newtown	481 15 5
Hughes & Son, Marton Chirbury	451 16 6
Farmer, Wyle Cop, Shrewsbury	429 9 4
Evans, Caersws, Montgomeryshire	417 3 0
Breeze, Llanidloes	392 1 10
Price & Son, Leigh Minsterley, Salop.	374 15 0
Woolley, Llandinam	372 16 0
E. H. Williams, Llanbrynmair*	345 0 0

* Accepted.

For tanks, &c., Lincoln Main Sewerage Works. Contract No. 6. Mr. James Mansergh, engineer of the works. Mr. John James Henderson, city surveyor:—

Binns Bros., Lincoln	£5,360 11 10
Bell, London	5,218 16 0
Hill Bros., Britton Ferry	4,920 16 6
Small & Sons, Gloucester	4,757 1 1
Hunter, Nottingham	4,719 17 0
Dawson, Bury	4,695 2 6
Kellett & Bentley, Lincoln	4,556 19 9
S. & W. Pattinson, Ruskington	4,523 4 10
Bell & Sons, Nottingham	4,262 13 9

For repairing, painting, &c., at the Lion Brewery, Belvedere-road, Lambeth. Mr. Francis Edwards, architect. Quantities not supplied:—

Sharpe & Mills	£3,330 0 0 !
Drew & Co.	1,660 0 0
Ayres	1,650 0 0
Dilloway	1,579 0 0
Perry & Co.	1,400 0 0
Sykes	1,350 0 0
Ford & Sons	994 0 0
Van Camp	932 0 0
Sawyer	930 0 0
Langmead & Way	960 0 0
Ansell (accepted)	947 0 0
Cawthorn	875 15 9
Crutchfield & McCarthy	800 0 0
Knight & Tillotson	788 0 0
Allen	604 0 0 !

For restoration of Langford Church, Essex. Mr. Edwd. Browning, architect. Quantities supplied:—

Longmire & Burge, London	£2,560 0 0
Hobson, London	2,539 0 0
Halliday, Oakham	2,500 0 0
Thoday & Son, Cambridge	2,490 0 0
Thompson, Peterborough	2,430 0 0

For alterations, repairs, and decorations, to St. Bartholomew's Church, Gray's-inn-road:—

Dixon	£547 0 0
Ansell	532 0 0
Killby	498 0 0
Axford	495 0 0
Southcott & Co.	467 0 0
Patten	460 0 0
Langmead & Co.	441 0 0
Jeffreys	420 0 0
Harris & Co., Old-street, E.C.	345 0 0

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